













A  
TREATISE  
ON  
NERVOUS DISEASES.

BY  
JOHN COOKE, M.D. F.R.S. F.A.S.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS, AND LATE PHYSICIAN  
TO THE LONDON HOSPITAL.

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IN TWO VOLUMES.

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VOL. II.  
ON PALSY  
AND  
ON EPILEPSY.

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CONTENTS  
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*OF PALSY.*

	Page
CHAP. I.	
Definition, Distinction, and General History	- 1
CHAP. II.	
History of Hemiplegia	- 16
CHAP. III.	
History of Paraplegia	- 36
CHAP. IV.	
History of Paralysis Partialis	- 48
CHAP. V.	
Of the Causes of Palsy	- 65
CHAP. VI.	
Dissections, Diagnosis and Prognosis	- 121
CHAP. VII.	
Treatment of Palsy	- 135

APPENDIX.

Abstract of Dr. Gordon's Report from the Minutes of the Army Medical Board	- 223
Return of Cases of Paralysis and Apoplexy	- 225



# CONTENTS

iii

## THE SECOND VOLUME PART I

6

### CHAPTER I

1

### CHAPTER II

1. The first of the two main divisions of the work

### CHAPTER III

2. The second of the two main divisions of the work

### CHAPTER IV

3. The third of the two main divisions of the work

### CHAPTER V

4. The fourth of the two main divisions of the work

### CHAPTER VI

5. The fifth of the two main divisions of the work

### CHAPTER VII

6. The sixth of the two main divisions of the work

### CHAPTER VIII

7. The seventh of the two main divisions of the work

### CHAPTER IX

8. The eighth of the two main divisions of the work

9. The ninth of the two main divisions of the work

10. The tenth of the two main divisions of the work



ON  
NERVOUS DISEASES.

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OF PALSY.

CHAP. I.

*Definition, Distinction, and General History.*

IN the first volume of this work, I have given an account of the opinions of the most celebrated medical authors, both ancient and modern, respecting the symptoms, causes, nature, distinctions, and treatment of apoplexy. — I now proceed to a similar consideration of palsy, a nervous affection which is a very common consequence of apoplexy.

The ancients very generally considered apoplexy and palsy as diseases of the same nature, but different in degree; apoplexy being an universal palsy, or palsy a partial apoplexy. Aretæus says apoplexy, pa-



raplegia, paresis, and paralysis, are all of the same kind; consisting in a loss of sensation, of mind, and of motion. Apoplexy is a palsy of the whole body, of sensation, of mind, and of motion.\* And on this subject Galen, Alexander Trallianus, Ætius, and Paulus Ægineta, agree in opinion with Aretæus. — Hippocrates, who in various parts of his works speaks of apoplexy, nowhere, as far as I know, mentions paralysis; and when he refers to this disease, he employs the term *apoplexia*. Both Aretæus and Paulus Ægineta represent him as speaking of apoplexy in the leg. Celsus describes palsy and apoplexy by the general terms *resolutio nervorum*.

Palsy has been variously defined by modern writers. It has been denominated an impotence of motion; a lax immobility not to be overcome by any effort of the will†;

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\* Αποπληξίη, παραπληγίη, πάρεσις, παράλυσις ἅπαντα τῷ γένει τωυτά. Ἡ γὰρ κινήσις ἢ ἀφ᾽ ἧς ἢ ἀμφοῖν ἐστὶ ἐκλειψις. Ἀλλ' ἀποπληξίη μὲν ὅλου τοῦ σκήνεος, καὶ τῆς αἰσθησίος τε καὶ γνώμης, καὶ κινήσις ἐστὶ παράλυσις. *Aret. de Caus. et Sign. Diut. Morb. lib. i. c. 7.*

† Boerhaave.



a loss of the power of voluntary motion, but affecting certain parts of the body only, and thus distinguished from apoplexy \* ; an incapacity of sense or of motion when the person is awake † ; a corporeal torpitude, and muscular immobility more or less general, without somnolency. ‡

Perhaps the following definition may be considered as comprehending all the chief characteristics of palsy. It is a disease in which there is a diminution, or an entire loss, of the power of voluntary motion, or of sensation, or of both, in some particular part or parts of the body, without coma.

Palsy sometimes comes on suddenly, sometimes gradually, and is preceded by symptoms much resembling those formerly described as the forerunners of apoplexy; particularly vertigo, drowsiness, pain in a circumscribed part of the head, numbness or torpor, loss of memory, and faltering in speech. These I have often seen the precursors of palsy; and to them may be added a faltering inarticulate voice, drowsiness, forgetfulness, a slight delirium, a

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\* Cullen.

† Young.

‡ Good.

dimness of sight, or double vision, trembling, a numbness gradually ascending to the head, frequent yawning, weakness, distortion of the mouth, and a disposition to faint. These signs in some cases precede palsy for a few hours, or for a few days. Sometimes a weakness of a limb, or of one half of the body, has for many months, or some years, been gradually increasing, and at length ended in a perfect hemiplegia. Sometimes notices of approaching palsy have come on, and then disappeared for some hours, as if there were a struggle between the constitution and the disease, till these threatenings have either wholly ceased, or have ended in a resolution of the nerves.\* Palsy often begins by affecting a very small part of the body, as one arm, or the hand only, or sometimes one finger, the muscles of the tongue, of one side of the face, or of the eyelids.†

Palsy chiefly consists in the loss of the power of voluntary motion, for sensation in a greater or less degree generally remains ;

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\* Heberden.

† Abercrombie.



may, in certain cases it is morbidly increased. I have seen several instances in which paralytic persons have felt very violent pain in the parts affected, particularly in the shoulder and arm. These remarks might be confirmed by quotations from various authors. — I never saw a case of palsy in which sensation was entirely lost; and an eminent physician of great experience asserts, that a total loss of feeling in this disease is extremely rare. The senses are often but little injured; sometimes they remain wholly unimpaired, and several instances might be adduced in which they appeared to be preternaturally acute. Dr. Heberden attended a paralytic person, whose sense of smelling became so exquisite as to furnish perpetual occasions of disgust and uneasiness; and he mentions one case in which *all* the senses became exceedingly acute.

The vital and natural functions in palsy are generally but little affected. The actions of the heart and lungs are indeed sometimes more languid, and the secretions and excretions less regular than in a state of health; but this is not usually the case.

It is a very common opinion, that parts affected with palsy become colder than they are in a state of health. Mr. Henry Earle, who has paid particular attention to the subject, and who has made some ingenious experiments relative to it, is of this opinion. He thinks that a limb deprived of due nervous influence is of a much lower temperature than natural; that it is incapable of supporting any fixed temperature; that it is peculiarly liable to partake of the heat of surrounding media; and cannot, without injury, sustain a degree of warmth which would not be at all prejudicial to a healthy limb. In examining paralytic limbs, Mr. Earle invariably found them colder than any other part of the body, unless they had been kept artificially warm; and he mentions twenty-five cases in the Bath Hospital, in which paralytic limbs were found to be below the natural standard.\*

Dr. Abercrombie, on the contrary, is inclined to believe that paralytic parts do not become colder than natural. In a communication with which that gentleman has

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\* Medico-Chirurgical Transactions, vol. vii.



favoured me on this subject, he mentions the well-known fact, “ that living animals have a remarkable power of accommodating themselves to varieties of external temperature, and of preserving a nearly uniform temperature, though exposed to great degrees of heat and cold; while inanimate bodies, placed in the same circumstances, are much heated in the one case, and much cooled in the other.” Now, this power of preserving a medium temperature, Dr. Abercrombie thinks, is partially lost by paralytic limbs; so that they are more heated, when exposed to heat, and more cooled, when exposed to cold, than parts which are in a healthy state. He had long ago observed, that paralytic limbs are sometimes warmer than sound limbs, but without being able to account for it. On attending to this principle, which appears to him to apply to it, it would be very easy, he says, to ascertain it by direct experiment. He mentions the following curious fact in illustration of his doctrine on this subject: — “ A medical gentleman, on visiting a paralytic patient, was astonished to find the paralytic arm so intensely hot that he

could not touch it. He was at first very much surprised ; but found, upon enquiry, that the patient had, by the advice of a friend, applied to the arm a quantity of very hot bran, or something of that kind very hot, which had been removed a short time before his visit.” If Dr. Abercrombie’s notion be correct, that paralytic limbs lose their power of preserving their temperature, or, in other words, if their power of resisting changes of temperature be lost, it appears to me, that the temperature of such parts would be less than that of other parts exposed to a medium of heat inferior to that of the human body, which is always the case in temperate climates.

Paralytic limbs often become more soft and flaccid than natural ; they waste and shrink, and sometimes appear œdematous. Mr. C. Bell has observed, that in these cases the nerves themselves lose much of their substance. Where my attention in palsy has been called to these circumstances, I have thought that the parts affected were diminished in size, and colder than healthy parts.—The torpor and numbness of paralytic parts is sometimes accompanied with a disagreeable sensation,



as if from the creeping of small insects over them ; hence called *formicatio*.

In palsy, the energies of the mind are often much weakened ; sometimes they are entirely destroyed. After a paralytic stroke, the memory especially is frequently injured ; and we have some curious cases on record of partial defects of that faculty, or of the complete loss of its power as to particular subjects. — Galen, speaking of the causes of the symptoms of affections of the governing energies, says, we have seen some persons who had entirely forgotten letters and arts, and even their own names.\* He observes, that such symptoms manifestly show a refrigeration of the brain, as in apoplexy and epilepsy† ; and though he does not use the term paralysis in this passage, I think it probable that he had also that disease in view ; for he sometimes includes palsy under the head apo-

\* Ενίους γοῦν καὶ γράμματα καὶ τέχνας τελέως ἐπιλαθόμενους ἐθεασάμεθα καὶ μηδὲ των σφέτερων ὀνομάτων μεμνημένους.

† Τὰ μὲν δὴ τοιαῦτα συμπτώματα τὸ σῶμα κατεψύχθραι δηλοῖ τε ἐγκεφάλου ὥσπερ καὶ τὰ ἀποπληκτικά καὶ τὰ ἐπληκτικά. *De Symp. Caus. lib. ii. c. 6.*

plexy. Dr. Baillie, in the fourth volume of the Medical Transactions of the College of Physicians, describes a curious case of impaired memory produced by palsy. It is that of a gentleman, aged fifty-six, who was seized with symptoms of compression of the brain, and became completely paralytic on the right side. By this attack, he lost his recollection of the words of his own language, except a very few; which he pronounced with the greatest distinctness, with a great variety of tone to express pleasure and displeasure, joy and sorrow, to explain the circumstances of his disorder, and to give directions about what he wanted, without being aware they were not the proper words to express his meaning. — The loss of the knowledge of language, as well as of the power of speech, is a very common consequence of a paralytic attack; and the recovery of it is generally gradual, and sometimes extremely slow. I have known several cases in which persons under these circumstances have not been able to recollect the words suited to express their thoughts, and have unconsciously employed others of a quite



different meaning. Instances might be adduced from authors, in which persons have lost all memory, even of their own language ; which has not been, without great difficulty, and often very imperfectly, regained. Wepfer has given a curious case of this kind ; and I have been informed from respectable authority, that a gentleman, after having received a partial injury in the head, by a fall from his horse, found that he had entirely lost the knowledge of a particular language, with which he had been well acquainted, although his memory, in other respects, remained uninjured.

I have lately had an opportunity of seeing a case of palsy, which in some of its symptoms a good deal resembled that described by Dr. Baillie. A gentleman, 46 years of age, who had always enjoyed a good state of health, after having experienced great uneasiness of mind, and after having been exposed to great bodily fatigue, was seized with apoplexy, followed by hemiplegia.

The fit was slight, but the subsequent hemiplegia was complete.

The power of speech was entirely lost, so that he could only utter the sounds ee-o; which, however, he so varied, that with the assistance of expressive gestures, he was able to convey his meaning very distinctly upon ordinary occasions.

He perfectly comprehended every thing that was said to him, and clearly understood what he meant to answer, but upon all occasions only uttered the sounds above mentioned; believing, however, that he actually employed the words suited to the communication of his ideas, and he often appeared surprised and displeased when he was not understood.

He sometimes endeavoured to explain his meaning by writing on a slate; but he generally substituted one word for another, and almost always erred in spelling what he wrote.

By certain means, which will be described in my account of the treatment of hemiplegia, he had gradually almost entirely recovered the power of speech; when he suffered another attack of apoplexy, which proved fatal.



The passions of the mind are sometimes greatly affected by palsy. Persons naturally mild and placid, have become peevish and irritable under its influence; and sometimes a change of an opposite nature has been caused by it. I had several years ago an opportunity of seeing an illustration of this remark, in the case of a much respected friend. The person to whom I allude had always, up to an advanced age, shown an irascible and irritable disposition; but after an attack of palsy, his temper became perfectly placid, and remained so until his death, about two years afterwards.

I have in several instances seen palsy terminating in childishness, or complete imbecility; and persons recovering from apoplexy appear, in many instances, to have undergone a most wonderful change as to the affections of the mind: we are informed that the wisest men and the bravest soldiers, persons of the strongest mental powers, have become so enervated as to weep like children on the slightest occasions.\*

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\* Van Swieten, Comment. § 1018.

The duration of palsy is very different in different cases ; sometimes a considerable degree of amendment is observable in a few days, but more frequently a favourable change is gradual and very slow. In cases of persons recovering from palsy, I have often observed, that the parts most distant from the head are first restored to sense and motion. In hemiplegia, it almost always happens that the power of the leg returns long before that of the arm ; I have even seen more than one case, in which the arm of the affected side has remained paralytic for several years after the restoration of the leg. An eminent French physiologist has made similar observations ; and remarks, that in the hemiplegias which supervene on apoplexy, the leg almost always also *loses* its motion first.

Palsy has been variously distinguished by nosologists according to its degree, its causes, and its seat. I propose to consider the disease according to its seat, and as it affects the body more or less generally ; and with this view I adopt Dr. Cullen's division of the genus Paralysis, into the species *hemiplegia*, *paraplegia*, and *par-*



*tialis*. The first being a paralytic affection of the whole of one side extending from the head to the foot; the second, an affection of one half of the body transversely; and the third, that which is confined to some individual internal organ or external part. To these species, Dr. Cullen has indeed added another, the *venenata*, or that palsy which is produced by sedative powers. In this he has followed the system of Sauvages, who is very much in the habit of distinguishing diseases according to their causes, and who, in fact, with respect both to hemiplegia and paraplegia, has enumerated a prodigious variety of species, such as the *plethorica*, *serosa*, *traumatica*, and very many others; but I cannot help thinking that such a system of minute division and subdivision rather tends to confuse than illustrate the subject.

## CHAP. II.

*History of Hemiplegia.*

THE disease\* *hemiplegia*, or *semisideratio*, as some call it, has been described or adverted to by almost all the ancients; yet the word *hemiplegia* does not any where, I believe, occur in the writings of Hippocrates, Galen, or Aretæus. Paulus Ægineta seems to have been the first who thus designated this species of palsy. Apoplexy, he says, consists in a general abolition of the powers of sensation and motion, together with an injury of the governing energies: if the obstruction be in either side, the disease is named *hemiplegia* and *paralysis*; but if the injury be in one particular part, it has its name from the part affected.†

Hemiplegia in a great proportion of cases is preceded by an apoplectic fit, which is

\* ημι, *dimidium*, πλησσω *percutio*.

† 'Εἰ δὲ κατὰ θάτερον μέρος ἡ ἔμφραξις γένηται ἡμιπληγία καὶ παράλυσις ὀνομάζεται, εἰ δὲ καθ' ἓν τι μέρος ἡ τοιαύτη συζαίη βλάβη ἐκείνου τοῦ μέρους τὸ πάθος λεχθήσεται.

*Paulus Ægineta*, lib. iii. c. 17.



sometimes so slight and transient as to have escaped general notice ; but the attentive observer will almost always perceive certain symptoms indicative of the stroke, particularly distortion of the muscles of the mouth, drowsiness, forgetfulness, and dulness of apprehension in a greater or less degree. As hemiplegia is so commonly the consequence of apoplexy, the precursors of apoplexy formerly mentioned must be considered as precursors of this species of palsy. Sometimes palsy appears immediately to succeed to these symptoms without the intervention of apoplexy, but I believe this very rarely happens. Sometimes hemiplegia comes on gradually ; and in such cases, a French physician of eminence \*, who has paid great attention to all circumstances connected with the disease, says that the face, just before the attack, becomes discoloured, the cervical and facial veins swell, the action of the tongue becomes impeded, the senses of sight and hearing become indistinct, the patient loses all sensation and knowledge of his actual state, and if standing, he falls

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\* M. Serres.

down on the side which is to become paralytic. The same diligent observer remarks, that on the accession of the disease, sometimes sooner, sometimes later, the thorax and lungs are unequally dilated, one side of the chest being as if motionless, whilst the other side is in a state of redoubled activity; and hence we may prognosticate which side is about to become paralytic. He has seen a distortion of the mouth preceding, for several hours, convulsive motions on the side afterwards to be affected.

Aretæus, who, without using the term hemiplegia, has well described the disease, was of opinion, that, in it, internal organs as well as external muscles are paralyzed; and some modern physiologists observe that the stomach and bowels are sometimes so affected, that they are insensible to the action of the strongest emetic and purgative medicines.\* Hoffman, speaking of a palsy of

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\* It would appear, however, from the experiments of Magendie, and the observations of other physicians, who have found inflammation of the intestinal tube produced by ordinary purgatives under these circumstances, that the stomach and bowels are, in fact, particularly irritable; — vomiting and purging not taking place, from such medicines, merely because the action of the muscles necessary for those functions, cannot be excited.



the right side, remarks that the viscera of that side, particularly the liver, the stomach, and the intestines, which borrow so many branches from the external nerves, become affected ; a circumstance not sufficiently attended to, he says, by physicians. He adds, I have often seen in the dissection of persons who died paralytic, a very great enlargement of the liver. \* Morgagni mentions the case of an old man who was affected with palsy in the right side, and at the same time with jaundice, the jaundice being confined to the paralytic side so accurately, that even the right part of the nose was yellow, whilst the left retained its natural colour. †

The palsy which follows apoplexy is generally a complete hemiplegia ; but this is not always the case. We find in authors a very great variety of hemiplegiac anomalies, if I may so call them ; and I think that I cannot better illustrate the history and the nature of this disease, than by giving an account of those cases which appear the most varied and the most extraordinary in their

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\* Hoffm. Consil. et Resp. Cent. 1. § 1. p. 23.

† Morgagni, Epis. xi. art. 14.

symptoms. — Sauvages, from Conrad Fabricius, speaks of an hemiplegia which he calls *transverse*, in which one arm and the foot on the opposite side were paralytic. This species of hemiplegia, he says, frequently is the consequence of a malignant epidemic dysentery, prematurely suppressed by astringents and opiates. He adds, the rationale of this is obscure.\* — Ramazzini speaks of a person in whom one leg had lost its feeling, but not its power of motion, and the other its motion, but not its feeling. †

Senac mentions a case of a paralytic person in whom the most acute sensation was experienced, without the power of moving, in one arm ; whilst, in the other, sensation was lost, though motion remained perfect. Burserius quotes a similar case from Heister. Sauvages enumerates, among the species of hemiplegia, one which he denominates *intermittens*. It is that hemiplegia, he observes, which comes on every

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\* Hujus phenomeni ratio latet in obscuro.

Sauvages, vol. i. p. 793.

† Ramazzini, De Morb. Artif. 286. E.



day, and, after some hours, recedes with an accession of quotidian fever; and he gives a minute description of a case of this kind.\* Morgagni describes an hemiplegia in a female of about forty years of age, which came on after a long-continued and obstinate pain of the head, and gradually increased, till the patient at length had no use of the side, either for sensation or motion. While she was thus affected, she was seized also with the same kind of palsy on the healthy side, every day, towards the evening, which went entirely off as the morning came on. After this disorder had attacked her seven or eight times at the same hour, or at least not more than one hour sooner or later, she died of inflammation of the thorax. The body of this person was not examined after death.

Dr. Abercrombie speaks of instances of loss of feeling without loss of motion: several, he says, are described in the *Memoirs of the Royal Academy of Sciences*. The most remarkable is the case of a soldier, a very strong man, and able for all

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\* Sauvages, vol. i. p. 795.

his duties, who had so completely lost the feeling of his right leg and arm, that he allowed the parts to be cut, or red-hot iron to be applied to them, without complaining of any pain. In a case related in the *Ephem. Nat. Curios.*, there was loss of motion on the one side, and loss of feeling on the other. — Dr. Falconer mentions the case of a gentleman who, after a paralytic attack, had such a morbid state of sensation, that cold bodies felt to him as if they were intensely hot. When he first put on his shoes, he felt them very hot, and as they gradually acquired the warmth of his feet, they appeared to him to cool.\*

M. Serres speaks of a double hemiplegia, which he describes as a disease in which the whole muscular system, except what relates to deglutition, is deprived of motion. In whatever degree the patient is stimulated, whether by blisters, or sinapisms applied to the limbs, or even by the application of the actual cautery, no contraction can be produced; the muscles appear to be passive, remain without motion, either relaxed, or

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\* Dr. Abercrombie, p. 58.



in a forced and permanent state of contraction. On dissection, in a case of this kind, two recent cavities were observed in the brain, one in the central part of the left lobe, close to the thalamus opticus and the corpus striatum; the other in the right lobe, in the bottom of the corpus striatum, having extended to the corresponding ventricle.

There are two cases of anomalous palsy, referable to the head Hemiplegia, related in the seventh volume of the Transactions of the Medico-Chirurgical Society, both of which were attended with several very curious and extraordinary symptoms and circumstances; I shall, therefore, here briefly notice them. The first is the case of the celebrated De Saussure; the other, that of Dr. Vieusseux, of Geneva.

“ M. de Saussure, after having been, for a considerable time, harassed by painful political exertions and domestic anxiety, was suddenly attacked with vertigo, followed by numbness in the left arm and leg. The arm executed with facility every kind of movement, but conveyed no distinct sensation of touch. M. de S. felt always as if

a quantity of sand were interposed between his fingers and the objects to which he applied them. This sensation was even to a certain degree painful and agonizing, as if the chief morbid affection of the hand had consisted in an excess of sensibility; so that he was afraid to use it without the protection of a glove. A sensation somewhat analogous to this was also felt in the cheek and mouth of the same side; which, when he passed his hand across his face, made him sensible of a line of demarcation, very distinctly defined between the right and left side, a sensation which was extremely disagreeable. In other respects, he enjoyed good health, and showed no symptoms of plethora, or of debility. He also retained for a long time his wonted presence of mind, and the full vigour of his intellectual faculties. Many months elapsed without the least change, although this interval was occupied with trials of a multitude of remedies.\* ”

“ The disorder grew worse, but almost always by sudden accessions more or less dis-

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\* Med.-Chir. Trans. vol. vii. p. 214.



tinct and severe. One of the most violent of these seizures occurred at the baths of Bourbon, and was brought on by a *douche* that had been made too hot ; and so complete was the attack, that the whole of the left side, from the foot to the tongue, was affected by it. His speech became gradually confused, and almost unintelligible. His legs, especially the left one, were raised or bent with difficulty. This was most perceptible when he attempted to walk in a straight line, following the junctions in the floor of his apartment ; a kind of exercise in which, from constant practice, he had become very expert, having pursued it with a view of accustoming himself to tread with security on the narrowest ledges of mountains, and borders of precipices. But his disorder had now deprived him of the power of preserving his balance, and his limbs were no longer obedient to the determinations of his will. The most remarkable circumstance, however, attending this state was, that after he had become so infirm as to require the assistance of a stick in walking, it was in going in or out at the door of a room that he experienced

the greatest difficulty. He could cross the room with a tolerably firm step; but the moment he reached the door, although open on both sides, and leaving a space much wider than his body, and without any difference of level in the floor, it was a most arduous undertaking for him to pass through. He tottered, and precipitated his motions, as if he were preparing for the most perilous leap; no sooner was the difficulty surmounted, than he recovered his former confidence, and proceeded with ease across the passage, until he came to another door, when the same unaccountable terrors again assailed him, and the same caution and trouble were requisite to achieve the steps by which the invisible barrier was to be passed."

The case of Dr. Vieusseux is not less extraordinary than that which I have just related. — " Dr. Vieusseux, after having felt a slight pain in the gum, and an extremely acute pain in the internal angle of the left eye, experienced a peculiar and inexpressible perturbation in all his sensations; a giddiness, which made him see objects reversed, and occasioned feelings similar



to those produced by a ship violently agitated, such as sickness and vomiting. These were followed by intestinal evacuations, and by a complete loss of his voice, which rendered his speech almost unintelligible, though without affecting his power of articulation. He also experienced a considerable difficulty in swallowing liquids, when in small quantities, and a sensation of weakness throughout the left side, with a numbness in the hand and the leg. He was able to walk, however, supported by two persons, but dragging his left leg ; and the motion of the fingers, though benumbed, continued free. His intellectual faculties, however, remained quite unimpaired, so that he could accurately observe the whole succession of symptoms. On examining himself, he discovered that the whole of his right side was so insensible, that he could be scratched or pricked without experiencing any pain ; and that this insensibility abruptly terminated at a line dividing the whole body in a vertical direction." \*

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\* Medico-Chir. Trans vol. ii. p. 216, 217.

About three months after the first attack, the following extraordinary symptoms supervened: — “ The *left* half of the head was insensible either to pricking or scratching; this insensibility prevailed over the left half of the forehead, of the nose, of the upper and under lip, of the chin, and over the left ear. The eye on this side was partly shut, and the corner of the mouth slightly drawn downwards; the tongue, when put out, was turned rather to the left than the right side, but to a very trifling extent. The hand and fingers had a sensation of numbness, as after having struck a violent blow on a hard body, particularly the thumb, and the first and middle fingers. In the whole of this side there was a sensation of weakness; the leg dragged a little in walking, but it had not the feeling of numbness of the hand; and, indeed, except the peculiar affection of the face just described, the whole of the left side of the body preserved its usual degree of sensibility. — The *right* side of the head possessed the same sensibility as before the attack. It had experienced at first a very slight degree of insensibility, but in



the course of three or four days had returned to its natural state. With respect to the other parts of the body, if a line of division were drawn in a vertical direction from the lower part of the neck or upper part of the sternum, descending forwards all the way between the lower extremities, and rising backwards up to the nape of the neck, every part of the body on the *right* side of that line was insensible either to scratching or pricking, and even to the pain that inflammation usually produces. The sensations of heat and cold were, in the right side, totally different from what they naturally are. When the patient put his right arm out of bed, the air of the room felt extremely hot. One day, when he was getting better, an attendant brought him an etherized julep, which he took with his right hand, and the bottle felt lukewarm ; but on taking hold of it with the left hand, he found it cold, as it really was. A new-laid egg having been brought to him for his dinner, on taking it with the right hand, he did not find it hot, but with the left, he felt as if it actually burnt him. He then distinctly perceived, that, to the right side,

cold bodies appeared hot, and hot bodies appeared cold, or only lukewarm. This is to be understood of liquids, and of polished bodies, as glass, stones, and metals, or even wood with a polished surface. Thus, on putting his right hand into cold water, it seemed lukewarm; and on putting it into boiling water, it appeared so far from hot, that he would have kept it immersed without being sensible of its scalding him, had not a disagreeable sensation, different from that of burning, at length warned him to withdraw it. But when he touched bodies that were not hard or polished, as the hand of another person, he could not judge of its degree of warmth; it appeared neither hot nor cold, and he was obliged to touch it with the left hand, in order to ascertain its temperature. This depraved sensation extended all over the right side; and consequently, on putting him into a cold bed, it appeared hot to the right side and cold to the left. In getting into a hot bath, it felt hot to the left side, and neither hot nor cold to the right; and in plunging into very cold water, which he did at a subsequent period, the water appeared almost



warm to his right side, but very cold to the other. He had often a sensation of cold water all over his face, especially when in the open air, which induced him to wipe himself as if he had been wet."

For a minute description of these two cases, together with the treatment of them, and a great variety of other interesting particulars, I refer to the Transactions of the Medico-Chirurgical Society.

I have lately had an opportunity of seeing a case of anomalous hemiplegia attended by circumstances not less extraordinary than those above described. An officer of high rank in the army, who is now about sixty years of age, was, in the year 1795, affected with a diminution of power in the right hand. This complaint increased, notwithstanding a variety of modes of treatment, till the year 1800; when, after a course of mercury, recommended by Mr. Cline, its further progress was stopped, since which time the disease has remained stationary. The peculiar circumstances of this case are the following. The muscles of the left arm, from the shoulder to the elbow, are much wasted,

and greatly diminished in power; while the muscles of the fore-arm are not at all lessened in size, and but little in power. The state of the right side is just the reverse, the muscles of the upper arm being of their natural size, and possessing their full power; whilst those of the fore-arm are very much wasted, and their motion, especially that of the fingers, is almost entirely abolished. In all other respects, this gentleman appears to be perfectly well. No cause for this disease can be assigned, nor did any method of treatment afford the smallest relief, till the mercurial course was adopted, when the progress of the disorder was arrested in the year above-mentioned. Since that time no attempts to remove the complaint have been made, yet it does not increase.

In a late publication by Mons. Keratry, a case of general palsy is related, the circumstances of which are so very extraordinary, that I have some doubt of the accuracy of his narration. This case is adduced with a view of showing how little residue of animal existence is sufficient for the preservation of the intelligent



being. There is now living, he says, in D'Isle et Vilaine, a person, who, after having been blind for ten years, lost also the sense of hearing, and, in a little time afterwards, became almost universally paralytic. He was entirely deprived of the use of his arms, legs, thighs, and of the whole exterior surface of the body, with the exception of a part of the face ; but the power of speech, and the functions of respiration, circulation, and digestion remained. Under these deplorable circumstances, however, he is not, says Mons. Keratry, wholly without consolation, for a sort of intercourse is preserved with his family and friends, by means of characters traced on that part which still retains its sensibility, and in this state of unexampled misery, he retains, in some degree, the distinguishing character of man — intelligence.\*

Among the anomalies of hemiplegia, we may likewise reckon those in which that disease is found combined with, or alternating with, convulsions, several of

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\* *Inductions Morales et Physiologiques*, p. 375.

which have been described by Morgagni and others.

In addition to these, many cases of this species of palsy, attended by uncommon symptoms, might be adduced from authors, particularly from Dr. Abercrombie's excellent treatises on Apoplexy and Palsy.

Hemiplegia sometimes terminates in a few days, but much more frequently the progress towards recovery is very slow. It often happens that an amendment to a considerable degree takes place, and then the disease remains stationary for months, or even for years : thus we frequently see persons, who have been attacked by Hemiplegia, so far recovered as to be able to walk in an imperfect manner, one leg being dragged, with the foot turned out, without making any material further progress towards the healthy state. — In some cases, Dr. Abercrombie remarks, the patient makes no improvement at all, is confined to bed in the most helpless state for several weeks, and then dies, gradually exhausted, sometimes comatose for a day or two before death. — Celsus has forcibly described the sad condition of a protracted palsy. He

says, those who labour under universal palsy are generally soon taken off; if not, they live, indeed, longer, but very seldom are restored to health; for the most part they are deprived of their memory, and drag on a miserable existence.\* The most distressing state of this disorder, says Dr. Heberden, is that in which the powers of body and mind are in the highest degree debilitated, and the passions becoming ungovernable, lead almost to madness, so that a person survives himself, as it were, and is reduced to a state of the utmost misery, if conscious of it; being unable to stand, to speak, to feed himself, or to retain the fæces or urine, yet continuing thus to live a burthen to himself and all his friends.

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\* Solent autem qui per omnia membra vehementer resoluti sunt, celeriter rapi; si correpti non sunt, diutius quidem vivunt, sed raro ad sanitatem superveniunt, et plerumque miserum spiritum trahunt, memoria quoque amissa.

*Celsus*, lib. iii. c. 27.



## CHAP. III.

*History of Paraplegia.*

*PARAPLEGIA*, which, in importance, ranks next to hemiplegia, is that species of palsy in which the lower half of the body, on both sides, is deprived of sensation, or of motion, or of both. The word *paraplegia* frequently occurs in the writings of the ancients, and was employed by different physicians among them in various senses, but by none in its modern acceptation. Hippocrates denominates all those paralytic affections *paraplegiæ*, which occur in consequence of apoplexy. Aretæus says, that disease which Hippocrates calls vehement apoplexy, when it affects the whole body, is denominated by him *paraplegia*, when it affects the leg. Aretæus himself uses the word to denote a remission of sensation and motion in some one particular part.\* Boer-

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\* Παραπληγὴ δὲ παρῆσι μὲν ἀφῆς καὶ κινήσεως, ἀλλὰ μερὸς ἢ χειρὸς, ἢ σκέλεως.

*Aretæus, de Morbis Diut. lib. i. c. 7.*

haave, in his Aphorisms, says, paraplegia is a palsy of all parts below the neck\* ; but in his lectures on the diseases of the nerves, he calls it a resolution of all the voluntary muscles below the neck, which, however, he observes, is never perfect ; for, if it were, death would ensue. It is the custom at present, in the medical schools, Van Swieten observes, to call that disease paraplegia, in which voluntary motion ceases in all parts below the neck.

Although Boerhaave and Van Swieten have thus defined paraplegia, I wish to remark, that, in this species of palsy, the superior parts of the body are seldom affected, unless the disease depends on causes seated in the upper parts of the spine. In proportion as the exciting cause in the spine affects the higher parts of the medulla spinalis, the higher parts of the body become paralyzed. Galen was aware of this fact, and has pointed out to his disciples the practical use to be made of the

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\* *Omnium cervici suppositarum partium.*

*Boer. Aphor. 1810.*

knowledge of it. If the spinal marrow, he says, be affected about the fifth vertebra, the hands will be wholly deprived of sense and motion ; if about the sixth, the paralytic affection of them will be more partial, &c. ; and if below the eighth, they will not be affected at all.\*

The loss of sensation and motion in paraplegia is chiefly observable in the pelvis, and the lower extremities ; the upper limbs, the organs of respiration, and the action of the heart and arteries, as well as the functions of other important viscera, remaining unimpaired. Indeed, Boerhaave notices this fact, and observes, in explanation of it, that the moving powers of the viscera can scarcely be said to arise from the nerves of the spinal marrow, but from the fifth, sixth, and eighth pair, and the recurrent nerves of Galen. If all the muscles below the head were to become paralytic, respiration, he says, and the motions of the viscera, could not go on ; yet these motions

\* Εἰ δὲ ὁ μετ' αὐτὸν (σπόνδυλον ὀγδοόν) οὐδὲ ὅλως ἔτι πάσχουσιν αἱ χεῖρες οὐδέν. *De Sympt. Caus. lib. i. c. 5.*



continue, and in apoplexy are even increased. M. Le Gallois, as has been already observed, places the source of the power of respiration in a part of the medulla oblongata, near the occipital opening, towards the origin of the eighth pair of nerves.

Paraplegia, as will hereafter be particularly described, arises from various causes, sometimes seated in the head, sometimes in the spine or its neighbouring parts; and the symptoms of the disease vary according to the cause. In some cases of paraplegia, no sufficient cause can be assigned. The paraplegia depending upon a diseased state of the spine, and its connections, is by far the most frequent. This affection may be produced by mechanical injuries, as by falls and blows; but, in a great proportion of instances, especially in infants and young children, it takes place gradually, depending on a constitutional affection. This disorder generally comes on slowly, and is preceded by languor, listlessness, and weakness in the knees. As it advances, a difficulty in properly directing the feet is experienced, and an in-

voluntary crossing of the legs, with frequent tripping or stumbling are observable, and the legs or thighs are found to have lost a good deal of their sensibility, and to have become useless for the purposes of motion. When an adult is the patient, the progress of the distemper is much the same, but rather quicker. \*

Mr. Pott is not disposed to consider this as a paralytic affection, and points out some circumstances by which it differs from what he calls the nervous palsy. I think, however, that it may be properly placed under the head paraplegia, as it consists in a loss of motion and of sensation in a greater or less degree, in the lower extremities; for, whatever may be the number of vertebræ concerned, or whatever may be the degree or extent of the curvature, the lower limbs only feel the effects of it.

In this disease, the general health does not seem at first to be materially, if at all, affected; but when it has existed some time, and the curvature has increased, many incon-

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\* Pott. Copeland.

veniences and complaints come on, such as difficulty in respiration, indigestion, pain and a sense of tightness at the stomach, obstinate constipations, purgings, involuntary flux of urine and fæces, &c. with the addition of what are called nervous complaints, some of which are caused by the alteration made in the form of the cavity of the thorax; others by impressions made on the abdominal viscera.\* It seems not improbable, that Galen was acquainted with this disease so well described by Mr. Pott. In the sixth chapter of the fourth book *De Locis Affectis*, he speaks very much at length concerning various derangements of the spine and their effects, and of the diseases of the spinal marrow itself; and he adds, you ought to know, that the vertebræ may be removed from their proper situation either by a fall or a blow, or some *preternatural tumour drawing or deranging the parts connected with the vertebræ themselves* (ligaments) *and the nervous body of the spinal marrow.* †

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\* Pott.

† *χερὴ γὰρ ὑμᾶς ἐπίσασθαι τοὺς σπονδύλους ἐξίστασθαι.*



The paraplegia depending upon an affection of the brain has been pointed out by Dr. Abercrombie, and particularly described by Dr. Baillie, in the Transactions of the College. This loss of sensation and motion in the lower limbs, Dr. Baillie thinks, more especially occurs at the middle or a more advanced age, and more frequently in men than in women. It is accompanied either by some feeling of pain, or giddiness, or sense of weight in the head, or undue drowsiness, and vision is often more or less impaired; sometimes the sight of one eye is almost entirely lost, and its pupil appears dilated, as in gutta serena, and occasionally there is a paralytic dropping of the upper eyelid of one eye; sometimes the affection of the brain is marked by a defect in the memory, and a want of the ready exercise of the general powers of the mind; sometimes one or both of the upper extremities are affected more or less with numbness, and with a feebleness in their motions,

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ποτε τῆς οἰκείας θάσεως, ἥτοι γ' ἐκ πτώσεως, ἢ πληγῆς, ἢ τινος ὄγκου παρὰ φύσιν, ἐπισπωμένου τὰ συμφῶν τοῖς σπονδύλοις αὐτοῖς καὶ τῷ νωτιαίῳ νευρώδι σώματα·

when no disease whatever can be found in the cervical part of the spine. These circumstances, Dr. Baillie thinks, afford strong evidence that the cause of the disease exists in such cases, within the cavity of the skull; and that it consists in some mode of pressure on the brain. For a more particular account of paraplegia, from this cause, I refer to the sixth volume of the Transactions of the College.

I have sometimes seen cases in which a paralytic affection of the arms has been occasioned by some complaint in the head; but I do not recollect to have seen, in an adult, a loss of power of the lower extremities from that cause, marked by the train of symptoms described by Dr. Baillie, of whose accuracy of observation, however, I have not the smallest doubt. \*

Paraplegia by no means exhibits such varieties of symptoms as occur in hemi-

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\* Since the former publication of my account of palsy, Dr. Baillie has shown me his notes of several cases of paraplegia, the symptoms of which were very strongly in proof that the cause of the disease was seated in some part or parts within the cranium.

plegia. Some anomalies of this species of palsy have been described by authors ; but I have not found any which appear to be particularly interesting. — In illustration of this part of our subject, I shall only introduce the following case of anomalous paraplegia, which Dr. Hutchinson has been kind enough to communicate to me.

Major H. in the 45th year of his age, experienced a paralytic affection of the lower limbs, rendering him unable to direct their movements, coming on in paroxysms, after the exercise of walking for two or three miles. On these attacks he was always under the necessity of catching hold of something by which he might support himself by his arms, or of quickening his pace to that of running, when, after a short time, if not supported, he fell to the ground. After such exertions, he always complained that his limbs were so heavy that he was unable to raise them, but he experienced no head-ache or giddiness, or disorder of the senses.

For two or three years previous to the first occurrence of this disorder, he had complained that his state of health was



deteriorated, although no precise symptoms of disease could be pointed out either by himself or his medical friends. His appetite was good, his bowels regular, though inclined to costiveness, and his usual robust appearance was not diminished. He entertained some fanciful notions respecting the state of his health ; and, from some uneasy sensations about the sacrum, he supposed that he had internal hæmorrhoids, though no evidence of their existence could be perceived by his physicians, by whom he was considered as hypochondriacal. After having suffered the attacks above described, very often, for two or three years, he gradually lost the power of walking without some support for one of his hands, though the shoulder of a boy of ten years old was sufficient for him to lean on. He still complained of the extreme heaviness of his limbs, which he could not raise from the ground without assistance. In this state he continued for four years : he then went to Bath, and had the hot water pumped upon his loins. Soon after this he complained of pain in the loins, which was followed by a collection of fluid behind the great

trochanter of the left thigh, which burst externally, and was discharged daily in considerable quantity. The paraplegia was now complete, the lower extremities being quite useless ; the fæces and urine, which, for a considerable time past he had with some difficulty retained, came away involuntarily ; his strength rapidly wasted ; he became much emaciated ; and, at the end of three months after his return from Bath, he died ; retaining the use of his senses and his intellectual faculties to almost the last instant of his life.

Major H. had for many years been exposed to the hardships of a military life, particularly to the extremes of heat and cold in various climates, which probably laid the foundation for his disease ; but the immediately-exciting cause of it was not ascertained, the body not having been examined after death. From the uneasy sensations he felt about the sacrum and loins, and the subsequent purulent discharge, it seems probable that the lower part of the spine was diseased ; though no external signs of such disorder had been evident before the formation of the abscess

and the local tenderness about the loins by which it was preceded, after the use of the pump-bath.

The termination of paraplegia, whether favourable or unfavourable, is generally slow, and it is sometimes protracted to a very great length of time.



## CHAP. IV.

*History of Paralysis Partialis.*

*P*ARALYSIS *PARTIALIS* is that species of palsy which affects less than half the body, or some one particular part or organ. In the definition of the genus palsy, we include diseases which consist in a loss of sensation ; we therefore place among the partial palsies, not only those local nervous affections in which there is a diminution or loss of motion, but also certain others, in which there is a want of sensation only. The partial palsies may be considered as they consist in a want of sensation, or of motion. Under the first head may be placed paralytic affections of the olfactory nerves ; of the retina ; of the gustatory nerves ; of the auditory nerves, and of the nerves of touch ; and under the second, the want of motion of the eyelids ;

of the muscles of deglutition ; of the organs of speech ; of the bladder ; and the want of motion in particular parts from the effects of lead. \*

Aretæus considers palsy chiefly as a defect of motion or action. Where there is a defect of sensation only, as sometimes, though rarely, happens, he says, it should rather be called *anaesthesia* † than *paresis* ; and Sauvages and Cullen have placed several of the paralytic affections, which consist in the loss of sensation, under the order, *dysaesthesia*. ‡

Paralytic affections of the organs of sense are designated by appropriate terms. Thus, want of sensation in the retina is called *amaurosis*, or *gutta serena* ; of the olfactory nerve, *anosmia* ; of the gustatory nerves, *ageusia* ; of the auditory nerves, *dysecæa*, or *cophosis* ; and of the nerves of touch, *anaesthesia*.

The organs of the vital and natural functions may also be affected by palsy, as well as the organs of sense. Thus we

\* Young. † ἀναίσθησις. ‡ δυσ αἰσθησις.

read of paralytic affections of the head ; of the organs of respiration ; of the œsophagus ; of the stomach and intestines, and of the viscera of the pelvis ; but, excepting the affection of the latter, as has been before observed when speaking of paraplegia, such palsies very seldom occur ; a circumstance we may understand, if we consider the sources from which they derive nervous influence, and the inherent powers which some of them possess. The functions of these organs are very important, and they are guarded in an especial manner from the attacks of this disease.

Particular muscles are often, from various causes, as will hereafter be explained, affected with palsy. Sometimes, says Galen, the whole leg becomes paralytic, sometimes the foot only, and the same may be said of the head. Dr. Abercrombie speaks of cases, in which the paralysis is confined to one muscle, or one set of muscles, and remains in that state for a long time without improvement, and without going further.

In a letter with which he has favoured



me respecting various paralytic affections, he states that, " he has lately seen a man, whose mouth is so twisted to one side, that the left angle of it is nearly on a line with the septum of the nose : he has no other paralytic symptom. Several years ago he went to bed one evening with violent head-ache, and awoke next morning with his mouth in this state. It has continued so without the least improvement, and without any return of affection of the head."

Persons much engaged in practice, see innumerable degrees of paralytic affections from the torpor and weakness of a single joint of a finger, to a complete apoplexy, in which sense and motion perish through the whole body. Sometimes the muscles of the lower lip have become paralytic, while the rest of the body has been free from the complaint, sometimes the eyelids are thus affected. Much more frequently the disease attacks the organs of speech, so that the voice becomes stammering and inarticulate, or wholly abolished. The nerves of one side of the face are also very frequently paralysed, in which case the affected corner of the mouth

becomes lower than that of the sound side ; so that mastication is performed with difficulty, the food adhering to the paralysed cheek, and both solids and fluids frequently escaping from the mouth.\* Paralysis, sometimes, affect the muscles of deglutition only, or of the tongue ; sometimes one arm, or hand, or one finger. The muscles of the legs and thighs are often the seats of this disease, as also the spincters of the anus and bladder, so that the urine and fæces cannot be retained.

The corners of the mouth and the tongue are very frequently affected in palsy, more especially in hemiplegia. There is almost always a twisting of the mouth with impeded speech. Indeed I never saw a case of that species of palsy, in which these symptoms were not in a greater or less degree present. Dr. Abercrombie is of opinion, that the inability to speak does not always depend upon a paralytic affection of the tongue. In the loss of speech, which accompanies many paralytic affections, he

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\* Heberden.

thinks there is something singular, as it is quite distinct from mere palsy of the tongue. "A man whom I attended in an ordinary attack of hemiplegia, eighteen months ago," says Dr. A. "recovered the use of his limbs after a short time, so that, his intellect being quite correct, he was able to follow his employment, which is that of a collector of taxes. He has never recovered his speech, however, in the smallest degree, although he has every motion of the tongue perfectly, and of the lips; every motion, in short, that is required for framing letters; and he can make a sound, showing that the functions of the larynx are unimpaired, but he never attempts any thing like an *articulate* sound. His understanding also is entire, and he has not lost his knowledge of written language, as appears from his management of his business." What is it, then, says Dr. Abercrombie, that he has lost?

Innumerable similar accounts of partial palsies might be quoted from various journals, and other medical publications; these, perhaps, will be considered sufficient for our present purpose.



A very common partial palsy, is that which arises from lead, and other metallic substances. Dr. Cullen considers this as a distinct species of palsy, which he denominates *venenata*; but I think it may with propriety be included under the head *Paralysis partialis*.

After this account of the various kinds of palsy, I shall briefly notice a question which has a good deal engaged the attention of physiologists, both ancient and modern.

It is universally admitted, that, in palsy, sensation often remains when motion is lost; and sometimes, though very seldom, we observe that motion remains when sensation is lost.\* But how does it happen that these powers are not always both lost, if either of them be lost, since they both depend upon the nerves? This seems at all times to have been considered as a difficult question. Galen has taken some pains in endeavouring to explain it.

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\* A very curious case of this kind, under the title *Anaesthesia*, is described by Dr. Yelolly in vol. iii. of the *Medical and Chirurgical Transactions*, page 90.

After Galen's cure, formerly mentioned, of a palsy of the fingers, by applications made to the spine, he says, a question arose among the physicians, what is that state of the nerves in which it happens that their motion remains, their sensation being lost? Galen told them that motion is active, but sensation is passive; and therefore a greater nervous power is necessary for the former than for the latter. There may then be nervous power sufficient for sensation, though not sufficient for motion; so that sensation may remain though motion be \* lost. With respect to those cases in which motion remains, sensation being lost, he observes, in explanation, that motion is performed by nerves through the medium of muscles; but that sensation depends upon nerves distributed to the skin. Now, the nerves of the skin may be injured, whilst those of the muscles remain uninjured, and

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\* Ἡ μὲν αἰσθησις ἐν τῷ πάσχειν, ἡ δὲ κίνησις ἐν τῷ ποιεῖν τι γίνοιτο. καὶ διὰ τοῦτο ῥώμης μὲν δεῖ τῷ κινῆσοντι, τῷ δ' αἰσθησομένῳ καὶ ἡ βραχυτάτη δύναμις ἀρκεῖ.

*De Loc. Affect.* lib. i. c. 6.

thus motion may remain though sensation be lost. He proceeds, in illustration, to say all voluntary motion is performed by muscles, the nerves alone not being capable of exciting such energy in the parts of an animal. Sometimes, he observes, the muscles themselves reach the part to be moved, sometimes they act by means of tendons, which by some are called aponeuroses: of this kind are the tendons which move the fingers, similar to those which Hippocrates calls round tendons. Now, if it happen that the nerves of the muscles are affected, the fingers lose their *motion*; if those distributed to the skin only suffer, the sense of *feeling* only is lost. When the limbs are all paralyzed, the common principle being affected, both sensation and motion are destroyed together.\* It may be observed that this last explanation of Galen might have been applied to both points of the question. In another part of his works, Galen speaks as if he inclined to the opinion of Erasistratus and Herophilus, who

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\* Galen, De Locis Affect. lib. i. cap. 6.



taught that nerves are of two kinds, one for sensation, and the other for motion. With respect to the tongue and eyes, he says, there can be no doubt that the nerves are of two kinds. \*

Forestus, on this subject, adopts the opinions and explanations of Galen. Haller also seems disposed to admit this doctrine. In endeavouring to explain the phenomena in question, he supposes that motion requires more power than sensation, and therefore first perishes. When a paralytic limb is void of sensation, he thinks the mischief must be very great, as but a small degree of power is required for the sense of feeling. In those cases in which the limbs are insensible, yet retain the power of motion, he supposes the fault to be in the epidermis, or the skin. † Sauvages also thinks that greater nervous power is required for motion than for sensation, and

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\* Κατὰ μὲν δὴ τὴν γλωτταν καὶ τοὺς ὀφθαλμοὺς οὐδεν ἀπορον, ἐπειδαν διττὰ νεῦρων γενοῦ τούτοις ἐστὶ.

*De Sympt. Caus.* lib. i. c. 5.

† Haller, *Elem. Phys.* vol. iv. lib. x. § 22.

refers to the demonstrations of Borelli in confirmation of his opinion.\*

Van Swieten adopts the notion of Erasistratus. He says, we know from physiologists, that some nerves serve for sense, others for motion, which, although distinct in their origin within the encephalon, yet, being collected in the greater trunks of nerves, are carried together to the different parts of the body, the functions therefore of the nerves for motion may be impeded, while those for feeling remain either wholly unimpaired, or injured in a small degree only, and the contrary.

I do not find, in the writings of the physiologists of the present day, any investigation of this question ; but Dr. Wilson Philip, in compliance with my request, has given me his opinion upon it. Dr. Philip, who has carefully studied the nervous system, says, “ I think we must admit that the bundles of nerves, going directly from the brain or spinal marrow to any part of the

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\* Sauvages, vol. i. p. 789.

body, contain nerves of two descriptions, one set adapted to convey the dictates of the will, the other to convey impressions from the part to the sensorium. This I think more probable than that impressions move backwards and forwards in actually the same channels: one of these opinions must be correct. If the former is so, there is no difficulty in accounting for the feeling being lost, and the power of motion remaining, and *vice versâ*. Indeed these phenomena of disease seem to me to go some way towards proving the former opinion. These observations may perhaps be applied to all nerves, but in other respects the ganglion nerves seem to obey laws very different from those which come directly from the brain and spinal marrow."

Mr. Charles Bell, whose physiological opinions deserve great attention, has also, in compliance with my desire, favoured me with his sentiments on this question. The nerves of sensation and motion, he says, "are bound together in the same membranes, for the convenience of distribution, but there is reason to conclude that they are distinct through their whole course, and



as distinct in their origin in the brain, as in their final distribution to the skin and muscles; why then should we suppose that they are similarly affected in diseases of the brain? Even nerves of the same class, viz. the nerves of voluntary motion, are not affected in the same degree by disorder of the brain. When there is effusion upon the membranes of the brain, from excessive inebriety, or dropsical effusion of any kind, the muscles are influenced unequally, and it is remarkable that those muscles, and consequently those nerves, which are immediately under the influence of the will, are first affected or debilitated in the greatest degree, where there is a general disturbance of the brain. The slighter disorders affect the muscles of the eyes; in a greater degree, we shall see palsy of the face; in a still greater degree, we find the muscles of the limbs unequal to their office. The muscles of respiration are next affected; and the fibres of the hollow viscera retain their office whilst there is life. If nerves of voluntary motion are thus differently affected according to the distinction of their functions, we need not be surprised that nerves,

in all respects so distinct as those of motion and sensation, should be differently affected by what appears to us a general and uniform affection of the brain. Besides, if it be as I have stated, that the nerves are different in their origins, though combined in their course, for example, that the ulnar nerve of the arm, being a nerve of the muscles, and also of the skin, has two roots, one connected with that part of the brain which receives sensation, and another with that which gives out the mandate of the will, we can readily conceive, that a partial injury of the brain, a clot of blood for instance, may cut off one root, and consequently one of the functions; whilst the other function of the nerve remains entire: but I must allow, that this appears rather too mechanical an explanation; and I return to my first position, and allege that the different functions of the brain are variously influenced by the same cause. I have repeatedly made a dissection of the brain in the case of acute hydrocephalus, when the ventricles were largely distended, where there was a free communication betwixt the lateral cavities, and an equal diffusion of the water:

here we might have expected that there would be a general oppression ; but so far otherwise, the sides of the body were differently affected, whilst one side lay immoveable, the other was in continual motion. The arm and leg of one side were continually convulsed. The muscles of one side of the face agitated, and the eyes and tongue rolling, but always with an inclination to the same side which was convulsed. I confess to you, that, witnessing so different an effect as that of palsy on one side, and convulsion on the other side of the body, from one and the same cause operating on the brain, the subject has appeared to me so obscure and difficult, that I have never ventured to grapple with the question ; and I send you these crude remarks to show you how willingly I would give you assistance if I could."

If we could show that the nerves of sense agree in their origin and appearance through their course, and differ from those of motion in both these respects, whilst, at the same time, they agree with one another, there would be a stronger ground for the distinction supposed betwixt nerves of sense



and of motion ; but, till this be demonstrated, the question must be considered as involved in great obscurity.

The opinions of Dr. Phillip and Mr. C. Bell, in some respects similar to those of Erasistratus and Herophilus, seem to receive some support from observations made respecting the nerves of the organs of sense.

We see, for the immediate purpose of *vision*, the optic nerves distributed in very minute ramifications, over the retina of the eye, where they form a sort of nervous pulp, whilst the nerves for the various *motions* of the eye, the *oculorum motores*, the *pathetici*, and the *abducentes*, have no resemblance to the optic nerves, either in their origin, their appearance, their course, or their distribution. The nerves of the organ of the sense of smelling, also differ in various respects from those which supply nervous power to the muscles of the nose. — The pair of nerves, called auditory, consists of two parts, the *portio mollis* and the *portio dura* ; the first of which is distributed through the internal ear for the sense of hearing, whilst the other goes to

the muscles of the external ear and face, for the purposes of motion. — The *muscles* of the tongue are supplied from the nerves of the ninth pair ; while those which go to the *papillæ* of the tongue, for the sense of taste, are derived from a twig of the inferior maxillary branch of the fifth pair, and, in like manner, we find, as Galen has indeed remarked, that the *papillæ* of the skin, the immediate instrument of the sense of touch, are supplied with nervous power from sources very different from those which furnish nerves to the superficial muscles.\*

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\* Etmuller observes, Credibile est, papillas cutaneas esse tactûs organum, ideoque hic ratio reddi potest, cur superstite motu sensus potest aboleri, viz. quia motus per nervos fit, sensus per papillas hasce.

principle, that in this species of apoplexy the meninges are primarily and principally affected, and that the different effusions are only the effects of these alterations. — In the apoplexy connected with palsy, on the other hand, M. Serres observes, there are no serous or sero-sanguineous effusions in the natural cavities of the brain, or in the space betwixt the duplicatures : there is no alteration in the texture of the meninges ; but the brain itself is materially altered in its structure, and appears to be exclusively the centre of activity of this apoplexy. Cavities are found in the substance of the lobes, the cerebral parts which surround them through their whole compass are inflamed, are of a reddish or yellowish colour, and hardened in proportion to the duration of the interval betwixt the formation of the cavity, and the death of the patient. The blood which fills these excavations is either coagulated, or half liquid, according as the cavities occupy the cortical or medullary substance, the corpora striata, the thalami nervorum opticorum, or the interior of the ventricles, into which, after having broken down their sides, it often penetrates. In



the complicated apoplexy, M. Serres thinks the palsy is a necessary effect of the organic alteration of the brain ; whilst, in the simple apoplexy, the brain being sound, motion remains uninjured. Hence, he says, when an apoplexy in its course shows no traces of palsy, may we not presume that its seat is in the meninges, and that the brain is not the centre of activity of the disorder ? and when, on the contrary, palsy becomes complicated with apoplexy in its course, that the encephalon and not the meninges is principally the seat of the irritation ? Serous, sero-sanguineous, bloody, or purulent, effusions are the effects, M. Serres says, of irritation of the meninges, or the encephalon ; or of arterial or venous ruptures which supervene in the course of apoplexy. If we properly interpret the facts, it appears easy to assign to these apoplexies their proper denominations. Hence, as is above mentioned, M. Serres calls the apoplexies without palsy, *meningeal* ; and those combined with paralytic affections, *cerebral*. When apoplexy is combined with palsy, the latter affection, M. Serres thinks, is a necessary effect of an

organic alteration in the brain, and he thinks it possible for us to know, during the life of the patient, what kind of apoplexy we have to combat. If it be simple apoplexy, the patient moving his limbs when excited, the disease, he says, has its seat in the meninges: if, on the contrary, it is accompanied with hemiplegia, the mouth being drawn to one side, the practitioner may conclude the apoplexy to be cerebral. For an account of other distinguishing symptoms, and the general description, and particular observations respecting these apoplexies, I must refer to the *Annuaire Medico-chirurgicale*, for April, 1820.

Dr. Abercrombie's sentiments on this subject, with which he has been kind enough to make me acquainted, are in some respects, and in some degree, similar to those of M. Serres. "Palsy has been generally supposed," he says, "to be connected with pressure on the brain: the facts which I have mentioned seem to discountenance that idea, and to show the disease dependent upon various and very different morbid conditions of the brain, some of them the very reverse of

pressure. We see it connected with extravasated blood; serous effusion often in no great quantity; simple and recent inflammation of a small part of the brain; encysted suppuration; induration of a part of the brain; the soft and corrupted state, called *sphacelismus cerebri*; and with a complete destruction and loss of part of the brain, as in a remarkable case by O'Hallaran, in which great part of the right hemisphere was destroyed by suppuration, leaving a frightful cavern in the very substance of the brain. In this case, the only symptom was palsy on the opposite side, the man retaining his faculties to the very moment of dissolution. When we add to these the fact, that all these conditions of the brain may take place without paralysis, the subject appears exceedingly obscure and difficult."

The observations of M. Serres, and the facts which he has adduced are highly worthy of our attention, and great credit ought to be given to him for his diligence in improving the peculiar opportunities for information which he enjoyed; but I think



the conclusions which he has drawn from his reasoning are too general, and by no means strictly logical. He states, that he has, in many instances, thrown blood upon, and into the meninges, the cavities, and the substance of the brain, without producing apoplexy, or even somnolency; that upon the examination of a very great number of persons after death from apoplexy, he has found the meninges bearing evident marks of irritation (inflammation), accompanied with effusions of various kinds, and in various situations within the cranium; that sometimes he has observed the brain itself to have been injured in its substance, but without effusion; that in the former cases he has ascertained the preceding apoplexy to have been simple, and in the latter, combined with palsy; and that he has known many cases of apoplexy without effusion, and of effusion without apoplexy: and hence he concludes that he has overturned the doctrine of apoplexy and palsy from pressure, and has established a better system respecting the distinctions and nature of the diseases, than any hitherto presented to the world: but the accuracy of one of

these conclusions at least, may, I think, be reasonably doubted.

If M. Serres chooses to denominate those apoplexies *meningeal* in which the meninges appear to have been diseased, accompanied with effusion, the brain being in a sound state, and those *cerebral* in which there is no effusion, but the brain itself is disordered; if M. Serres chooses to make this division of the disease, I see no objection: perhaps it is better than that of sanguineous and serous. But, though physiologists may approve of his distinctions, I much doubt whether they will be disposed to admit that he has overturned the doctrine of apoplexy and palsy from pressure.

He has shown that blood has been effused in various situations within the cranium, without producing apoplexy; but he cannot hence fairly conclude that effusion never produces the disease. Since he admits that there is effusion in the meningeal apoplexy, how can he prove, even allowing it to be the consequence of what he calls irritation of the meninges, that the irritation, and not the effusion, is the immediate exciting cause of the disease. If compression by fluids were

the cause of apoplexy, M. Serres says there could be no apoplexy without effusion ; but the want of logical precision here is evident, unless we grant, what I believe few physiologists would admit, that compression from fluids is the *only* cause of the disease. That some degree of pressure may be made on the brain without producing either coma or apoplexy, may be conceded as proved by M. Serres's experiments ; but it by no means follows that a different or greater pressure would not produce these diseases ; indeed, both observation and experiment decidedly show, that compression does sometimes, according to its degree, give occasion, first to somnolency, and then to complete apoplexy. It is a fact perfectly well known, that after the operation of the trepan, pressure on the part deprived of cranium produces these effects : and innumerable instances might be adduced in which compression by depressed bone after accidents, has given occasion to coma and apoplexy.

These observations are confirmed by di-



rect experiments, which lead to positive conclusions; not to negative conclusions, like those of M. Serres. M. Portal trepanned the cranium of a dog; he compressed the dura mater and the brain, sometimes with his fingers, and sometimes with a bouchon of linen or of wood, and sometimes by water or mercury poured through the cavity made in the cranium. A funnel was adapted to the opening of the cranium, which was filled with water or mercury, so as to produce a graduated compression, more or less strong, upon the brain. In whatever way the experiment was made, it instantly produced the following effects—The animal ceased to bark; if the compression was increased, it became agitated by strong convulsions; if still further increased, a profound sleep took place, the convulsions ceased, and the respiration became stertorous. If the pressure was diminished, the breathing became more free, and the convulsions returned. This experiment was very often repeated by M. Portal, and always with the same results, except where the compression of the brain had been so

strong, that its substance had been weighed down, *affaissée*.\*

Mr. Astley Cooper has been kind enough to give me an account of an experiment which he made upon a dog, with a view to ascertain what degree of pressure the brain could bear, which in part confirms M. Portal's experiment. He trepanned a dog, and detached the dura mater in a circle from the inner table of the skull, to the extent of half an inch. He then pressed upon the dura mater, so as to depress it about the fourth part of an inch, and the dog exhibited no signs of uneasiness. He then pressed upon it to half an inch of depression, and the animal showed great signs of uneasiness, endeavouring to escape from his grasp with all his efforts: he then pressed to three quarters of an inch, and the animal became torpid, breathed laboriously, and according to the declaration of Mr. Davie, who assisted him in the experiment, the pulse became slow and irregular. Suddenly he removed the pressure, and in half a

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\* Portal, Cours de Physiologie Experimentale, p. 248.

minute the animal started from the table, turned several times round, as if giddy, and then staggered away.

Now, keeping these observations and experiments in view, if, in a case of apoplexy, preceded by sudden violent pain in the head, vertigo, somnolency, &c. we should find, on examination soon after death, that a vessel in the brain had been ruptured, from which a considerable quantity of blood was effused ; and if no other disease could be detected within the cranium, would it not be natural and reasonable to conclude, that on the rupture of the vessel, the blood effused had first occasioned a pressure, sufficient to produce vertigo or somnolency, and afterwards by its increase, a complete fit of apoplexy? M. Serres, perhaps, would not allow that cases of this kind ever occur, but many such might be adduced.

In summing up the conclusions from his experiments, M. Serres says, thus, effusions of blood do not produce apoplexy, whether situated between the cranium and the dura mater, or between this membrane and the brain, &c. &c. ; but he ought to have said,



thus it appears that effusion, &c. do not *always* produce apoplexy, or that a certain degree of pressure may be made on the brain without giving occasion to that disease. The principal conclusion, that apoplexy is *never* produced by pressure, is not warranted by his experiments and observations. M. Serres remarks, that remains of effused blood have been found, where persons have laboured under apoplexy, from which they recovered, and afterwards died of some other disease without the recurrence of apoplexy ; but it is evident, that if what remained was less than what had been originally effused, it might be too little to afford a sufficient degree of pressure ; so that such facts do not seem to support his theory.

The accounts of Lieutaud and Bonetus, of dissections after apoplexy and palsy, do not favour the distinctions of M. Serres, respecting these diseases. Lieutaud mentions a very great number of cases of various affections of the meninges of the brain found after death ; such as *meninges inflammatae, pustulosae, meningum purulentia, meninges erosae, meninges putres et syderatae,*

&c.; but in no one of these cases had there been any thing like the simple apoplexy of M. Serres, or indeed any apoplexy at all.

On the whole, it appears to me, that in the consideration of this subject, physiologists have been led into error by the spirit of system. Some of them maintain that apoplexy and palsy *always* depend upon general or partial pressure within the cranium; whilst M. Serres, and his followers, assert, that pressure *never* produces these diseases. Is it not reasonable to say, that they sometimes do, and sometimes do not, depend upon this cause? and does not observation warrant the assertion? Is not the *degree* of pressure to be taken into the account? That the disease in question cannot always be traced to this cause, must be admitted; but I have no doubt that, in the generality of cases, apoplexy is produced by general, and palsy by partial, compression.

After this account of the causes of hemiplegia, I proceed to the consideration of those of *paraplegia* and *partial palsy*.

Hemiplegia, as above-mentioned, chiefly

depends upon morbid affections in the head; *paraplegia*, in a great proportion of cases, is produced by morbid affections of the spine and its connections. These generally come on gradually, and depend upon a constitutional disease; but, sometimes, they are suddenly occasioned by injuries done to the spine, or to the neighbouring parts, by falls or blows. Boerhaave mentions a case, in which, in consequence of a fall, all the parts below the os sacrum, the genital organs, the bladder, the rectum, the thighs, the legs, and the feet, were paralysed, and their functions never were restored. — Numerous similar instances might be adduced from authors. Paraplegia has been sometimes produced by the disease called *spina bifida*. Cases of this kind are mentioned by Tulpius and Huxham.

Dr. Abercrombie, in his *Observations on the Diseases of the Spinal Marrow*, has described several cases of paraplegia from various morbid affections of that organ; from inflammation of the spinal cord, or its membranes; from serous effusion in the spine; from the destruction of a portion



of the spinal cord ; from blood extravasated in the vertebral canal ; from a tumor in the lumbar vertebræ, in consequence of a fall ; and from concussion of the spine.

The paraplegia from affections of the spine, Mr. Pott ascribes to a scrofulous disposition. The primary and sole cause of the mischief, he thinks, is a distempered state of the parts composing, or in immediate connection with, the spine, tending to, and most frequently ending in, a caries of the body, or bodies, of one or more of the vertebræ : and hence all the evils, whether general or local, apparent or concealed ; the ill health of the patient, and, in time, the curvature.\* Adults are by no means exempt from this disease ; but Mr. Pott never saw it at an age beyond forty.

Although, in a great proportion of cases, paraplegia, especially in infants, depends upon the constitutional affection described by Mr. Pott, it sometimes, as I have before mentioned, arises, particularly in adults, from causes situated in the head ; and both Dr. Baillie and Dr. Abercrombie adduce

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\* Pott, p. 20.

instances in which, on dissection after paraplegia, such causes have been actually found within the cranium.\*

Dr. E. Harrison, in his *Observations on Spinal Diseases*, differs considerably from Mr. Pott, as to the causes and method of cure of paraplegia. Dr. Harrison thinks that Mr. Pott, in speaking of the causes of paraplegia, has attributed too much to caries of the bones in the production of the formidable disease, and he asserts that paraplegia may appear in its most complete form, independently of caries. Though Mr. Pott always found disease in the ligaments, and sometimes in them without any apparent affection of the bones, he unaccountably overlooked them, and limited his curative indications to the morbid state of the bones. It, however, appears from later dissections, says Dr. Harrison, that the vertebral bones are not always enlarged, or otherwise disordered, even when they are accompanied with a

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\* Abercrombie on *Diseases of the Brain*, p. 33. and Baillie, *Trans. of the College*, vol. vi. p. 22.

greater or less degree of deformity and crookedness of the spine. Dr. Harrison is “of opinion that we shall find the true cause of spinal complaints in the connecting ligaments, which seem to have lost part of their power of holding the bones together. These get relaxed, and suffer a single vertebra to become slightly displaced. The column, now losing its natural firmness, other bones begin to press unduly upon the surrounding ligaments; they, in turn, get relaxed and elongated, by which the dislocation is encreased, and the distortion permanently established. The direction becomes lateral, anterior, or posterior, according to circumstances; but the malady has, in every instance, the same origin, and requires the same method of cure.” Dr. Harrison remarks, that persons often recover from spinal affections, which, he thinks, would not be the case if the principal mischief began in a bone, as Mr. Pott teaches; or in cartilage, according to others. “Had Mr. Pott attended carefully to the incipient stage, it is more than probable he would have found that the affection generally begins in the lig-



## CHAP. V.

*Of the Causes of Palsy.*

THE chief *predisposing* causes of general palsy, are those which I have enumerated and explained in the first volume of this work, as the predisposing causes of apoplexy; such as advanced age, hereditary feeble constitution, and especially a leuco-phlegmatic, pituitous, or dropsical habit. The *exciting* causes of palsy also resemble those of apoplexy, as will be particularly pointed out in the consideration of the several species of the disease.

With the exception of paraplegia, paralytic affections, in a very great proportion of instances, occur in somewhat advanced age, or in the decline of life, especially in constitutions weakened by disease; yet younger persons, if hereditarily predisposed to palsy, are liable to its attacks.

That extremes of heat and cold may occasion palsy, is evident from many cases adduced by authors. Hippocrates

says, when persons have passed their fiftieth year, defluxions taking place from the head, cause them to become paraplectic, if the head be suddenly exposed to the heat of the sun, or to great cold.\*

Insolation and a too frequent use of the warm bath, give occasion to this disease; and also the immoderate use of hot diluting liquors. — Hippocrates, Galen, Cælius Aurelianus, Celsus, and others of the ancients, consider cold, especially when conjoined with moisture, as powerfully predisposing to palsy. Hippocrates, in his first book, *De Morbis Popularibus*, speaking of cold and moisture conjoined, says, in this constitution of the winter, paraplegiæ began, and affected many, of whom some died in a short time. Galen asserts, that paralysis is often produced by cold; and adduces several instances in which it

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\* Καὶ ὁκόταν τὰ πεντήκοντα ἔτεα ὑπερβάλλωσι, καταρροὶ ἐπιγενόμενοι ἐκ τοῦ ἐγκεφάλου παραπληκτικούς ποίεσι τοὺς ἄνθρώπους, ὁκόταν ἐξάιφνης ἡλιωθεῶσι τὴν κεφαλὴν ἢ ριγώσωσι.

*Hipp. de Aere, Aquis et Locis*, p. 18. ed. Hieron. Merc.

This word παραπληκτικούς, has been by some translated semisyderatos.

was clearly referable to that cause. Celsus says, that resolution of the nerves especially prevails in wet weather. Modern writers, particularly Hoffmann, Hollerius, and Huxham, confirm these observations. The case of a young man is described, who lost the power of speech and the use of the right side, by sitting at an open window, in a very hot room, with his neck exposed to a current of cold air. From this paralytic affection he recovered; but, after a few weeks, both the aphonia and the palsy returned, in consequence of a sudden and violent fright.\* Dr. Powell, in the fifth volume of the Transactions of the College, mentions several cases of paralytic affections from cold. Dr. Darwin relates the case of a gentleman, who was seized with palsy while in the cold bath.†

By a report from the records of the Army Medical Board, with which I have been favoured by Dr. Gordon, at the desire of my friend, Sir James M'Gregor, it appears

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\* Hoffman, &c.

† Darwin, Diseases of Volition, class iii. 2. 1.



that the chief exciting causes of apoplexy and palsy, as they occur in military service, are intoxication, exposure to the sun, drinking cold water, and bathing in cold water; and that a predisposition to these diseases is produced by long-continued attacks of fever, visceral diseases, epilepsy, and dysentery.\*

Dr. Gordon has given me an account of two cases; one of apoplexy from intoxication, marked by a purple or livid face, stertorous breathing, dilated pupils, slow pulse, &c.; and the other the case of a trumpeter, who, at the early age of fourteen, on returning from bathing, fell down insensible, with stertor, dilated pupils, and a very slow and full pulse. The subject of this last case was of stout make, large head, and short thick neck.

From the inspection of the annexed table †, it appears to me, that the proportion of cases of apoplexy and palsy, as they occur in the army, is very small; a circumstance which may perhaps be explained by observ-

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\* Vide Report in the Appendix.

† Vide Appendix.

ing, that soldiers generally quit a military life before they arrive at the age when these disorders most frequently occur; and that those who are strongly predisposed to them are, as Dr. Gordon has observed, on that account refused admission into the army.

Palsy may also be occasioned by violent passions of the mind, particularly by fear, grief, and anger. Many instances of this kind might be adduced from Lieutaud and others.

Paralytic affections not unfrequently arise from, or are connected with, other diseases, particularly apoplexy, epilepsy, gout, rheumatism, scurvy, and scrofula; the suppression of customary evacuations and effusions, such as cessation of the usual perspiration, the stoppage of the menstrual or hæmorrhoidal discharges of blood, and the drying up of old sores and issues.

M. Portal relates the case of a woman of a full strong habit, who, for a long time, constantly experienced strong convulsions in the left inferior extremity, just before the accession of the menses, which did not

abate till after the discharge of a considerable quantity of blood. At about forty years of age, when the menses ceased, the parts which had been convulsed, became completely paralytic. This person afterwards was affected with convulsions in the left arm, and she died comatose.

On examination, the right side of the spinal marrow was found softened, and of a very red colour; whilst, on the left side, it appeared quite sound through its whole extent. This observation proves, says Mons. Portal, that a læsion of one side of the spinal marrow, as is the case with the medulla oblongata, may give occasion to convulsions or palsy on the other side of the body. \*

A variety of noxious powers applied externally or internally may give occasion to this disease; an account of which will be given under the head Partial Palsy.

With respect to the causes of *Hemiplegia*, I wish to remark that they are more especially those of apoplexy. Palsy in this

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\* Anat. Med. tom. iv. p. 116.



form is almost always preceded by an apoplectic fit, of greater or less duration and violence ; the causes, therefore, of both are similar. Hemiplegia may indeed be occasioned directly, and without the intervention of apoplexy ; as by injuries done to the head from falls and blows, but cases of this kind very seldom occur. The causes of these diseases, when they act generally and powerfully, seem to produce apoplexy, and to give occasion to palsy when they act partially, or with less violence ; so that, by an increase of power of the cause, palsy may terminate in apoplexy ; and by a diminution of it, apoplexy may terminate in palsy. Dr. Cullen says, “ the compression occasioning hemiplegia may be of the same kind, and of all the different kinds that produce apoplexy ; and therefore either from tumour, over-distension, or effusion :” and almost all who have written on these diseases, agree in opinion with Dr. Cullen on this subject.

Pressure on the brain has for many years past been considered by physiologists as the chief, if not the sole cause, both of

apoplexy and of hemiplegia ; but M. Serres, a physician of eminence, in a memoir lately published by him in the *Annuaire Medico-chirurgicale*, denies that pressure, in any case, produces either of those diseases. As M. Serres has taken great pains in investigating this subject, and as he had an opportunity of seeing many cases of apoplexy and palsy, and of examining the bodies of persons who died of these diseases, during an attendance of several years at the Hotel Dieu, and the Hospital de la Pitie, his experiments and observations, and the conclusions which he draws from them, respecting apoplexy and palsy, are, I think, highly deserving of our consideration.

With a view to prove that pressure on the brain ought not to be considered capable of producing apoplexy and palsy, M. Serres instituted the following experiments.

As apoplexy in man chiefly occurs in the decline of life, he selected an old dog as the subject of his first experiment. He trepanned the middle part of the cranium of this animal, over the superior longitudinal

sinus, and introduced a very fine bistoury, so as completely to perforate the sinus, and stopped the external opening in order to confine the effused blood to the interior. The dog was then let loose; he ran about the room trying to make his escape. Three hours afterwards he appeared so little altered from his usual state, that it was doubted whether an effusion had actually taken place or not. On opening the cranium, however, a very large clot of blood was found in the great interlobular scissure, and another, somewhat less, upon the left hemisphere. — Another experiment of the same kind was made upon a young dog, with the same result. — These experiments were repeated many times upon rabbits and birds, and always with similar effects: no somnolency was occasioned, nor any of the symptoms which accompany apoplexy.

M. Serres then proceeded to try the effects of effusions of blood forced into the ventricles of the brain. He trepanned a dog as before, over the middle part of the superior longitudinal sinus, and introduced a very small bistoury into the great interlobular



scissure; he pierced the corpus callosum, and so directed the point of the instrument to the left, as to enter the ventricle on that side. He then withdrew it, and closed the external opening. The animal, for about a minute, was affected with vertigo; he was dull through the whole day, and his pulse was a little agitated, and there was a considerable alteration in his appearance: his sleep in the night was disturbed; in the morning he walked about the laboratory, and appeared less indisposed than on the preceding evening; but there was no somnolency. On opening the cranium, the effused blood was found to have filled the great interlobular scissure, and to have penetrated into the left ventricle, which contained an ounce and a half of it. A small cavity was found in the anterior part of the corpus callosum. A rabbit two months old was subjected to a similar experiment, and with similar consequences.

After this, M. Serres proceeded to try the effects of artificial cavities made in the substance of the brain. For the subject of this experiment he chose an old dog, and made an opening over the lateral and some-

what posterior part of the longitudinal sinus ; the bistoury pierced the left hemisphere, and brought away about two drachms of its substance ; but no somnolency, or impeded respiration supervened. A cavity, containing a clot of blood of the size of a nut, was found situated at the middle part of this lobe. In another animal, he made a cavity in each lobe, without any apoplectic symptoms. He pierced through the two lobes in a pigeon, with a very large pin, with the same result ; a transverse cavity made from one side of the cranium to the other, produced no somnolency. In another experiment he made an opening into the middle part of one hemisphere of the brain, and took away a certain quantity of cerebral substance ; he then introduced a cork into the aperture, with a view to increase compression. A complete hemiplegia was the consequence ; but there was no apoplexy or somnolency. These experiments were repeated in various ways, on birds, rabbits, and other animals, and always with the same effects.

Hence it appears, says M. Serres, that effusions of blood do not produce apoplexy,

whether lodged between the cranium and dura mater, or between that membrane and the brain; whether they occupy the great interlobular scissure, and thus lie upon the corpus callosum; whether cavities be made in the fore, the hind, or middle part of the hemispheres, or quite through them both; or, finally, whether, piercing through the corpus callosum, we penetrate into the ventricles of the brain, and fill these cavities. On whatever animals we try these experiments, whether on birds, on rabbits, or on dogs, the result is the same: and, by analogy, M. Serres concludes, that apoplexy in man ought not to be attributed to such effusions.

After having thus, by experiment, endeavoured to prove that apoplexy and palsy are not produced by pressure, M. Serres attempts, by reasoning, to show the absurdity of the doctrine which attributes these diseases to that cause. “Do the facts of pathological anatomy, relative to the brain of apoplectic persons, he asks, contradict my experiments? Has a constant agreement betwixt the accession of apoplexy and the formation of effusions, been ob-



served? Does the doctrine of compression from effusion account for the formation of apoplexies, their progress, and termination in death or in recovery?—On dissection, serous, sero-sanguineous, and bloody effusions,” M. Serres says, “have been found within the cranium, without any symptoms of apoplexy preceding death. How is this to be accounted for? Can a cause exist without an effect? Apoplexies, we are informed, are sometimes in their course subject to paroxysmal revolutions. How is this to be understood on the supposition of compression from effusion?—It is well known that apoplexies accompanied with effusion may be cured. In these cases, what becomes of the effused fluid? Is it absorbed, or does it remain after the cure?” — M. Serres mentions instances in which apoplexy has been cured, and the patient has continued well, although the effusion which accompanied it remained, and appeared after death. The effect of these fluids, then, in man, he says, is the same as that which we have seen in brute animals; neither the origin, the severity, nor the duration of apoplexy are to be attributed to them.

The sudden accession of this disease, its periodical returns, which are sometimes observed, and experiments upon living animals, all lead us, M. Serres says, to the belief that effusion is the effect, not the cause, of apoplexy: a conclusion, he observes, very important for the pathology of the brain, and to which he requests the utmost attention of observers.

Having thus, as he imagines, overturned the old doctrines respecting the causes and distinctions of apoplexy, Mr. Serres proceeds to point out the foundation of his new division of the disease. — On carefully observing and comparing the symptoms of apoplexy, he perceived that it chiefly appears in two different forms; the one simple, without palsy, the other always combined with the loss of motion of one side or the other. The first, he calls *meningeal* the second *cerebral* apoplexy; the first consisting in a diseased state of the meninges of the brain, the second is a diseased state of the brain itself. In the meningeal apoplexy, the brain is healthy, but the membranes are disordered, and frequently fluids of various kinds are effused. In the

cerebral, the brain is altered in its structure, but no fluids are effused. Now M. Serres maintains, that hemiplegia is connected with the cerebral, but never with the meningeal apoplexy; that effusions are the effects of irritation of the meninges, or of ruptures of blood-vessels taking place in the course of apoplexies, but that they never, by compressing the brain, give occasion to the disease.

Out of one hundred cases of apoplexy which M. Serres had an opportunity of seeing, twenty-one, he says, were simple, and seventy-nine were complicated with palsy. In sixteen of the first description there was serous effusion in the ventricles and circumvolutions of the brain, separately or jointly; in one there was a sero-sanguineous effusion in the left ventricle; in two there was a similar effusion betwixt the tunica arachnoidea, and the pia mater upon the two hemispheres; and in the two others no effusion could be seen. In all these cases the brain was sound; but the meninges were impaired in different degrees. In those of the longest standing, in which the serous effusion was great, the



pia mater was injected, the vessels greatly dilated, and the arachnoid thickened and opake : in that case in which the ventricle alone was the seat of the sero-sanguineous effusion, the arachnoid was somewhat opake in its extent, red in the interior of the ventricle, which was studded with numerous miliary granulations. In the two cases of effusion upon the hemispheres, the arachnoid of the lobes was sensibly inflamed ; and where there was no effusion, this membrane was dry, and thickened. — Does not this constant conformity, says M. Serres, betwixt the effusions and the alteration in the meninges, show that they are connected together ? Do we not, in the different affections of the arachnoid and pia mater, see the source of the different effusions, and the reason of the absence of all moisture in the two last-mentioned cases ? Ought not the irritation of the arachnoid of the ventricle, and of the portion covering the lobes, to be considered as having produced the sero-sanguineous effusion ? A multitude of facts, says M. Serres, enable me to answer these questions in the affirmative ; and I think I may take it as a

aments, and passes through them to the bones and cartilages." The more we become acquainted with spinal pathology, says Dr. Harrison, the stronger is our conviction that paraplegia ought to constitute a generic term, and include under it numerous species. Of these, one, and that comparatively of rare occurrence, originates in a carious state of the bones. In others, it takes place in the progress of the complaint, but in the greater number it never appears, though the health be generally impaired and destroyed by the mischievous effects impressed upon the constitution.\*

A diseased state of the spine, and its connections, commonly produces paralytic affections of the lower extremities; but if the injury be in the higher parts of the vertebral column, the muscles of the superior extremities sometimes are also affected, and even general palsy may be thus produced. M. Portal, in his *Anatomie Medicale* †, mentions a curious case of al-

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\* Harrison on Spinal Diseases, in the *Medical and Physical Journal*, vol. xlv. p. 117.

† Page 117.

most universal palsy, depending upon a thickened and hardened state of the spinal marrow contained in the cervical vertebræ. In this instance the right side gradually became entirely paralytic, and afterwards the left side, in like manner, so that there was no power of motion in the trunk, or in the extremities ; yet the patient breathed and swallowed without much difficulty, and other functions remained but little impaired. By degrees, however, his sight, and afterwards his hearing, failed, and were entirely lost. He could still, however, speak and swallow, though imperfectly, and respiration remained tolerably free. At length, the power of breathing and swallowing became very difficult ; the pulse very weak, and so slow as to beat but from thirty-six to forty times in a minute ; and, after remaining in this state for a short time, he died.

The causes of *partial palsies*, or paralytic affection of particular parts only, are numerous and various. These, as well as the general palsies, may be occasioned by derangements in the head or spine, as well as by a diseased state of the nerves themselves. Stupor and paralysis may arise



in one particular muscle, and yet the fault may not be in that muscle, nor in the nerve, nor in the arteries, nor in the veins, but in some particular part within the cranium. \*

Though partial palsies are sometimes occasioned by injuries done to the spine, I believe they more frequently depend upon morbid affections of the nerves themselves. Galen was of opinion, that partial palsy often depends upon pressure on the nerves. If a nerve, he says, becomes thicker and harder than natural, the propagation of its power is hindered; or if it be compressed by some hard body, it cannot afford a free passage to the power. If compression be made on nerves, by cords or by the hand, by phlegmonous or schirrous tumours of neighbouring parts, or by luxated or fractured bones, the nerves become first torpid, and afterwards entirely lose sense and motion. †

Galen considers the application of cold

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\* Boerhaave.

† Galen, De Symptom. Causis, lib. i. c. 5.

as a common cause of partial palsy, and mentions the case of a boy, who, whilst fishing in a river, was so affected by cold about the seat and the bladder \*, that he became unable to retain the fæces and urine. Cold, he says, often injures a single muscle, especially that situated upon the superficies of the seat, as when a person sits upon a cold stone, or remains too long in cold water.

Forestus speaks of palsy in the hands, from cold and moisture applied to the neck, and of palsy of the bladder from a similar application to the back. †

Partial palsy seems occasionally to depend upon inflammatory action in the brain, or in the paralytic parts, when the disease is often accompanied with pain, which is sometimes very violent. I have received an account of cases of this kind from Dr. Abercrombie and Mr. C. Bell, to whom I am indebted for useful information on many points connected with my present

\* Καταψυχθεὶς τὰ περὶ τὴν ἕδρον τε καὶ κύστιν.

*Galen de Locis Affectis*, lib. iv. c. 7.

† Forestus, Obs. 84. and 92.

enquiry. Dr. Abercrombie, in his communication to me, describes a case of much paralytic disease from a circumscribed morbid cause in the head. “ A gentleman, aged 33, was seized with numbness and slight palsy of the left side, the numbness affecting also the left side of the face, the line being drawn with the utmost precision along the centre of the nose. He had no headache, and the pulse was natural. He was largely bled, and the affection went off in a few days; but from this time he was observed to be less acute in business, his memory was impaired, and he sometimes complained of his head. After three months, he was observed one day more confused and forgetful than usual, and in the night was seized with perfect apoplexy, which was fatal in twenty hours. On dissection every part of the brain was found in the most healthy state, except that in the centre of the right corpus striatum there was an abscess, regularly and nicely defined, no bigger than would have contained a small pea. In the lower part of the left corpus striatum there was a more irregular suppuration of great fætor



extending over a space about the size of a small bean. There was no serous effusion, and no other morbid appearance of any kind.

Mr. C. Bell has described to me a case of partial palsy, with great debility, preceded by inflammation of a nerve, accompanied with excruciating pain. In this instance, the inflammation was in the ulnar and fibular nerves, and the pain, which was of the most agonizing kind, had confined the patient for two years, and had quite subdued a powerful frame. He had in vain sought relief, says Mr. Bell, from some of our most distinguished friends, and he was left in a state of despair. Observing that the pain was confined to certain parts of the hands and feet, and that a distinct class of muscles were become paralytic and shrunk, Mr. Bell's attention was directed to the corresponding nerves, and he found them tender, and acutely sensible to the slightest pressure. The accessions of pain were periodical and alternating, the feet being generally first attacked, and afterwards the hands. By repeated purging, and the application of leeches along the

course of the nerves, together with other remedies to be described when I speak of the treatment of partial palsy, this patient was restored to health.

Among the causes of partial palsy, Mr. Bell reckons long continued exercise of particular muscles, or violence done to them; and he has favoured me with some instances in illustration of this opinion. He mentions one in which a literary gentleman experienced a feebleness, spasm, and paralytic affection of the thumb and fore-finger of the right hand, in consequence of long continued writing, in transcribing some valuable MSS.; and another, in which a young lady, by much exertion in attempting to lift a great weight, became affected with a complete paralysis of the muscles of the shoulder, so that the scapula hung down in a most remarkable manner, giving her the appearance of distortion.

There is another class of local palsies, Mr. Bell thinks, which are neither preceded by pain, inflammation, nor violence, and which do not proceed from disorder of the brain, but from irritation in the bowels. He remarks that the loss of motion from

this cause occurs often in children. “We frequently see,” says Mr. Bell. “among those wretched Irish women who apply as out-patients to our hospitals, one with a child at her breast, with its arm hanging down entirely without muscular power. In such cases, I have invariably found, on questioning the mother, that there has been disorder in the bowels, with a passing of green stools, griping, and spasm, previous to the paralytic seizure of the limb.” This paralytic affection, Mr. Bell says, will sometimes attack one or both of the lower extremities, and then it is confounded with loss of motion from disease in the spine.

Mr. Bell finishes the account of paralytic affections, with which he has favoured me, by proposing some queries which I am unable to answer, but which I here insert, as containing a striking description of certain facts. — “Let me ask you,” he says, “what is the nature of that sudden interruption to the growth of parts which we so frequently witness? A finger — an arm, or leg — one side of the face — one eye — one testicle, will be suddenly interrupted in its growth — in the mean time the individual



increases in stature, and we find at length the arm or leg of a child, as it were, unnaturally joined to an adult. — Although there is here no paralysis, no want of muscular motion, yet, is it not owing to an affection of the nerves of the part?”

Among the exciting causes of partial palsies we may reckon the poison of certain mineral substances, particularly of quicksilver, arsenic, and lead. The fumes of these metals, or the reception of them in solution into the stomach, have often produced paralytic affections. We have innumerable instances of these disorders from such causes in persons who work in various preparations of those metals, as water-gilders, workers in lead mines, plumbers, manufacturers of white lead, and painters; white lead, from its opacity, being generally employed as the basis of many kinds of paint. Palsies in the hands and arms are often seen in workmen of this description; and, perhaps, the disease, usually called *colica pictorum*, may be considered as a paralytic affection of the intestines; although it is attended generally with great pain. Colic of long standing, arising from

lead, is almost always accompanied with more or less of palsy in the upper extremities. The *fumes* of white paint may give occasion to partial palsy. I had an opportunity, some years ago, of seeing a case strongly illustrative of the truth of this remark. I was desired to visit a gentleman, who laboured under a paralytic affection of the whole of one side of his face, for which neither he nor any of his family could assign any probable cause. After numerous fruitless enquiries, I at last found that, for two or three nights, he had slept in a room in which there was a closet, the door of which had been recently painted, of what is called a dead-white colour. His bed was placed close to this door; and as the weather was warm, he slept without curtains, that side of his face which afterwards became paralytic, being turned towards the painted door. Under these circumstances, with the knowledge I had of the deleterious effects of lead in other cases, I had no hesitation in ascribing this partial palsy to the fumes arising from the paint. — Palsy, also, we are told, may be produced by the fre-

quent *external application* of lead, even in its metallic form. Dr. Percival, in his experiments and observations, mentions, from Dr. Wall, the case of a child about two years of age, the son of a plumber, who had been always remarkably healthy, who was seized with violent pains in the bowels, attended with a fever, and convulsive motions in the limbs. These complaints had been attributed to worms, and several medicines had been unsuccessfully given. When Dr. Wall visited him first, he found him paralytic on one side, and delirious. "Upon enquiring into the cause of his disorder, and particularly whether the child had been used to go into the room where they melted the lead, he was informed that he did frequently; and that it was a custom with his maid to let him run barefooted along the sheets of lead, whilst they were warm, with which he appeared to be much delighted." Dr. Wall did not then hesitate to attribute the disorder to this cause. \*

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\* Percival on the Poison of Lead, p. 126, 127.



A person, a few years ago, was admitted into St. Bartholomew's Hospital, under the care of Dr. Powell, who was affected with palsy from this cause in a very extraordinary degree. The patient, who was a painter, was totally regardless of cleanliness in his business, and was in the habit of wiping his brush on the sleeves of his coat, so that he was particularly exposed to the fumes of the paint which he used. In this case, not only the hands of the patient were paralytic, but also the lower extremities, and the sphincter muscles of the bladder, so that he could not retain his urine. The plan of treatment, from which he received benefit, will be mentioned when I speak of the cure of palsy, from lead, and other pernicious mineral substances.

In the Medical and Physical Journal, the case of a young man is related, who had been afflicted with paralysis of the upper and lower extremities, with violent pains in the muscles and bowels produced by arsenic, which he had mixed with butter and wheat flour, and made into pills by rolling the composition in his hands. The disease, after some time, proved fatal.

The symptoms resembled those produced by the poison of lead, but were more violent.

Dr. Clutterbuck, in his account of the morbid affections, arising from the poison of lead, among others, mentions a paralytic state of the limbs. After describing the *colica pictonum*, or that species of colic which is produced by lead, he says, the extremities, in a short time, become affected, more especially the superior extremities. “ A weakness in the hands is the first thing perceived. The patient is unable to grasp any thing with firmness. This weakness seldom extends itself above the wrists ; but he is tormented with pains in the shoulders and upper arms, resembling chronic rheumatism. The weakness soon increases, so that he loses altogether the use of his hands. He is unable to support the hand in a line with the fore-arm, and can, with difficulty, lift it to his head. The fingers are incurvated, and he is unable voluntarily to extend them ; not that they are rigidly contracted, for they can with ease be straightened by any extraneous force ; they remain bent, because the tonic powers of

the flexor muscles exceeds somewhat that of the extensors. No diminution of sensibility in the skin is perceived to accompany this paralytic state of the arms ; this affection seems confined to the muscles alone. The legs are seldom affected in the same manner, as the arms are found to be.”\*

The causes of the paralytic affections of the organs of sense seem sometimes to be those of general palsy above-mentioned, sometimes to consist in affections of the nerves distributed to the particular organs. The nerves, independently of the brain, are liable to many and various diseases ; they may be hardened or softened ; swelled or inflamed ; they may be injured by wounds ; they may be compressed by tumors, by the dilatation of blood-vessels, or by the violent contractions of muscles ; they may be deranged by luxated or fractured bones, and many other causes.† Thus we plainly see how the parts to which they are distributed, may have their sensation and

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\* Clutterbuck on the Poison of Lead, p. 10.

† Portal, Anat. Med.



motion diminished or destroyed. We are informed that obstruction, ulceration, or induration of the olfactory nerves have been found in cases of *anosmia*; a disordered state of the thalami nervorum opti-  
corum, and of the optic nerves in *amaurosis*; and in like manner, morbid affections of the acoustic nerves in *cophosis*; and hence we may fairly consider morbid affections of the nerves as probable causes of these diseases. These partial nervous affections seem sometimes to be connected with general diseases, particularly scrofula.\*

Among the exciting causes of paralysis, particularly of hemiplegia, none are more common, as we have already mentioned, than partial morbid affections of the brain; and it is curious to observe that when the cause is seated on one side of the brain, the paralytic affection almost always appears in the opposite side of the body. This is very generally admitted as a fact by the moderns, and was well known to the ancients. It is noticed in the writings of Hippocrates, Galen, and Aretæus, as

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\* Portal, Anat. Med. Morgagni, Ep. 13.

well as in those of Valsalva, Morgagni, Lancisi, Santorini, Haller, Malpighi, Forestus, Scarpa, and others. Mr. Serres speaks with the utmost confidence on this subject. He says that he has dissected with attention, one hundred and seventy-one bodies of persons who had died of cerebral apoplexy with complete hemiplegia, and that in every case he found the hemisphere of the brain opposite to the paralytic affection materially altered in its structure; that he had examined the brain of forty-seven hemiplegiac persons who died in the Hôpital de la Pitié; and that he had forty-seven times seen disorganization in the lobe of the brain opposite to the paralysed side; that he had received from the hospitals of the Saltpetrière, the Bicêtre, and the Hotel Dieu, about one hundred and fifty brains of hemiplegiac persons, and always without a single exception, the alteration in the encephalon was in the lobe opposite to the side affected. Hence he asserts, that the cerebral disorganization always occupies the lobe opposite to the side deprived of motion, in the cerebral apoplexy. M. Serres allows that state-

ments very different from his, are to be found in authors, but he is persuaded that they are erroneous.\*

Physiologists have been much perplexed in endeavouring to explain this fact. They have very generally attempted to account for it, by supposing that a decussation, or crossing of the nerves takes place in their course; but there has been much difference of opinion with respect to the place and manner of this decussation. Aretæus, speaking of palsy, observes, “when its origin is in the head, if on the right side, the parts on the left become paralysed, if on the left, those on the right are affected.” The cause of this, he says, is a change which takes place in the beginning of the nerves, for the right nerves do not go, in their course to the right, straight on to their ends, but at their origin they take a direction towards each other, so as to decussate in the form of the letter † X.

\* *Annuaire Med. Chirurg. vol. i. p. 329.*

† *Ἦν δὲ κατάρχη κεφαλῇ, ἐπὶ μὲν τοῖσι δεξιῇσι τὰ λαιὰ παραλύεται, δεξιὰ δὲ ἐπ’ ἀριστεροῖσι· αἰτίη δὲ τῶν ἀρχῶν τῶν νέρων ἡ ἐπαλλαγὴ· οὐ γὰρ κατ’ ἰξίν τὰ δεξιὰ ἐπὶ δεξιὰ*



Lancisi refers this phenomenon to a decussation of fibres in the corpus callosum, and Santorini in the corpus pyramidale.

Some have thought that a decussation takes place in the medulla oblongata, or the medulla spinalis. Soemmering says immediately below the origin of the lingual nerves, medullary fibres begin to cross each other, but neither he nor Haller, who entertained the same opinion, have adduced sufficient ground for it.

Dr. Yelloly, in an ingenious and elaborate paper published in the first volume of the Transactions of the Medico-chirurgical Society, discusses this subject very minutely. "From the accounts," he says, "which I have given of the observations made with regard to the structure of the medulla spinalis, by some of the principal authors, there seems to be no sufficient evidence for believing that there is a regular decussation of the fibres of this body, or

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ὁδοιπορέει μέσφι περάτωνδε, ἀλλ' ἔμφυτα τῇ ἀρχῇ εὐθὺς  
ἐπ' ἐκεῖνα φοιτῇ, ἀλλήλοισι επαλλαξάμενα εἰς Χιασμὸν  
σχήματ'.

*Aret. de Caus. et Sympt. Morb. Diut. lib. i. c.7.*

a propagation of nervous influence from one side of it to the other. Galen states with precision, the effects of dividing the spinal marrow at different parts of its course transversely, and then goes on to the consideration of longitudinal and semi-transverse divisions. Where the spinal marrow was divided longitudinally, he found that none of the nerves which were derived from it on either side, were paralysed; when transversely, that the nerves only were paralysed, which were directly below the part divided on the same side. If it be true, that in the spinal marrow the fibres or other medium of the propagation of nervous influence, decussate in such a manner, that the influence afforded to the nerves of one side is supplied from the other, it seems to follow, that a longitudinal incision, such as was made by Galen, will have the same effect as a transverse one, in producing a paralysis of both sides; for if the propagation is either oblique or transverse, a longitudinal incision must interrupt it." \*

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\* Med. Chir. Trans. vol. i. p. 192.

From the experiments of Galen, and an experiment made by Mr. Astley Cooper at Dr. Yelloly's request, which confirms the accuracy of Galen, Dr. Yelloly thinks it extremely improbable that there is any decussation in the course of the medulla spinalis; but, from some circumstances attending Mr. Cooper's experiment, he infers that the two sides of the medulla spinalis are not perfectly independent of each other. "Much of the reasoning, and many of the facts which render it probable, that nervous energy is propagated directly downwards in the spinal marrow, and does not decussate, seem to apply likewise to the medulla oblongata; for the one is regarded by anatomists as the mere continuation of the other, and by many of them is considered as not at all different in structure." \* Santorini's opinion, with regard to the place in which decussation is effected, is, that it occurs in the tuberculum annulare and medulla oblongata. The former idea is somewhat probable, Dr. Yelloly thinks, since

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\* Med. Chir. Trans. vol. i. p. 201.



the tuberculum annulare is the first link in the chain of communication between the encephalon and spinal marrow ; since there is reason to suppose, that the full effect of nervous influence is not produced till an union of the cerebrum and cerebellum takes place, which seems to be effected in the tuberculum annulare ; and since the circumstances, which he has noticed in the course of his paper, are adverse to the idea of decussation occurring either in the medulla oblongata or spinal marrow. In an endeavour to discover the particular seat of decussation, supposing that it exists, the proper object of inquiry seems to be, not so much as to the place where there may be any real or apparent crossing of fibres, as with regard to that, at which the effects of an injury in any part of the encephalon cease to be propagated in the side in which it was inflicted. Much important information on this point might be obtained by a minute attention to the effects which pressure on particular parts of the brain might have on particular nerves ; and if it were found that pressure on the origin of such nerves as arise from the cerebrum or cere-

bellum, or their crura, previous to their union, affects the same, and not the opposite side of the body, it would furnish some degree of support to the former part of Santorini's opinion."\*

Doctors Gall and Spurzheim have attempted to demonstrate the place of nervous decussation. "When we separate from each other," they say, "the two inferior cords of the medulla oblongata and spinal marrow, we see that they are separated by a pretty deep fissure, the bottom of which is occupied by transverse medullary filaments. This fissure is only interrupted at one place, which is only two or three lines in length. The fibres of the pyramidal eminence of one side form there three or four filaments, as the hairs of a mat, and which are blended afterwards with the rest of the medullary cord, into which they thus enter obliquely." A committee of the French National Institute seem to regard this circumstance of structure, as accounting for the production of paralysis in one side of the body, by injury on the opposite side of

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\* Med. Chir. Trans. vol. i. p. 213.

the brain, but Dr. Yelloly thinks that this structure does not account for the phenomenon in question. He is of opinion “that, in as much as the glosso-pharyngeal or lingual nerves, which are affected by pressure on the opposite side of the head, arise from the medulla oblongata *above* the part at which this crossing is described to take place, the decussation at this place, which is confined to a very small portion of the vertebral column, does not account for the production of paralysis in one side of the body from injury in the opposite side of the brain.”

Notwithstanding the observations and reasonings of anatomists and physiologists on this subject, much obscurity remains; yet, on the whole, I think it seems more probable that a decussation of nerves takes place in the tuberculum annulare than in any other part. If the minute structure of the brain were better developed, if it could be shown to consist of converging fibres, we might better understand how injuries done to one side of the brain, especially in the higher parts of the hemispheres, might produce palsy on the opposite side of the



body ; but though such a fibrous structure of the brain has been supposed to have been seen by Leuwenhoek, Bidloo, Cowper, Gall, and Spurzheim, and others, its existence has not been satisfactorily proved.

## CHAP. VI.

*Dissections, Diagnosis and Prognosis.*

THE appearances, observed within the cranium on the dissection of persons who have died of palsy, very much resemble those after apoplexy, which have been already described, particularly effusions of various kinds, tumours, and other compressing causes, and læsions of the brain. Blood and serum, more especially the latter, have been often found, as also effusions of serum in various parts, and in various quantities\*; sometimes between the cranium and the meninges; in the meninges, or between the pia mater and the brain; sometimes on the surface of the brain; amongst its intergyral spaces; in its ventricles; and through its sub-

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\* Bonetus.

stance: and some cases are mentioned by authors, of such effusions in the cerebellum, and in the medulla spinalis. Abscesses in the brain, and pus effused between the cranium and dura mater; and also læsions of the brain, from wounds, have been observed after palsy; and in one case a quantity of concrete blood was found filling the ventricles, in consequence of a rupture of the plexus choroïdes.\* Instances of a flaccidity and softness of the brain have been frequently seen after palsy. Valsalva mentions a case of this kind; and several French physiologists have lately observed, and minutely described this appearance. Various morbid appearances in the head after palsy, in consequence of apoplexy, have been recorded.† These are chiefly blood in a concrete or grumous state, in different parts; in the ventricles, but more especially, in cavities in the substance of the brain. Sometimes blood has been found in a fluid state, and serum in several instances.

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\* Bonetus.

† Lieutaud.



In one case, a considerable quantity of serum was seen between the meninges and in the ventricles; the corpora striata showing something like marks of gangrene. Various diseased appearances of the corpora striata in these cases, and some, of the plexus choroides, have been described. Willis, after palsy of long continuance, often found the corpora striata in a diseased state; and Morgagni confirms his observations, as well as Peyrouse, who, in one instance discovered a hard tubercle, of about the size of a bean, in the middle of the corpus striatum, which had given occasion to hemiplegia. Dr. Abercrombie, in investigating the morbid conditions connected with the various forms of paralysis, remarks, "that in the cases which pass into apoplexy, the same appearances are observed as in the apoplectic attack: extravasations of blood; in many cases, serous effusion, often in small quantity;" and he quotes cases from Morgagni, in one of which a man had "loss of speech, and hemiplegia of the left side, and died in ten days, two ounces of

blood being in the right lateral ventricle. Another, with the very same morbid appearances, had paralysis of the left arm only, and died on the fifth day. In a third, who had palsy of the left side, and died apoplectic in twelve hours, blood was found to have passed into all the ventricles. In some of these cases, palsy appears on both sides before coma is induced, as in a case by the same writer, in which there was palsy of the whole left side, and of the right arm. Blood was seen in all the ventricles, but it seemed to have come from the right ventricle, the substance of the brain there being lacerated. In other cases, complete palsy of both sides has been observed before apoplexy took place. Extravasation on the surface occasions palsy on the opposite side, and, as the quantity increases, seems to induce coma. On the other hand, extravasation may take place in all these situations, inducing fatal apoplexy, without having induced paralysis." \*

Among the appearances after hemiplegia

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\* Abercrombie, part ii. p. 42.

and paraplegia, accompanied with affections of the head, tumours, indurations, schirrus, and suppuration, have been found in various parts within the cranium.\* After partial palsies the nerves themselves are often observed to have lost much of their substance; and, as Mr. C. Bell has remarked, much of their white opacity. This ingenious physiologist says, that nerves, if not employed, degenerate into a sort of cellular membrane.

On the dissection of a very great number of persons, who had died of cerebral apoplexy, accompanied with hemiplegia or other palsies, M. Serres found many marks of disease within the cranium, such as serum and blood in different states and proportions, and in various parts, but chiefly in the ventricles of the brain. The most constant and remarkable morbid appearance, however, was that of injury done to the substance of the brain. In many instances, he observed cavities in different parts of the brain, but chiefly in the cor-

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\* Abercrombie, part i. p. 2.



pora striata, and thalami nervorum opti-  
corum, generally containing coagulated  
blood. M. Serres gives a particular account  
of the appearances on examining the head  
of a person who died of cerebral apoplexy,  
with *complete* palsy, in which he expected  
to see a cavity in each hemisphere, and  
was surprised to find that the superficies  
of the brain was quite healthy, and that,  
on cutting the lobes, section after section,  
with the greatest attention, he could per-  
ceive no organic alteration. This was the  
first time, says M. Serres, since my atten-  
tion had been directed to cerebral apo-  
plexies, that I had found the lobes sound  
in a person who, during life, had laboured  
under a manifest palsy; and, whilst I was  
reflecting on the singularity of the fact, my  
house-pupil discovered a bloody cavity in  
the middle of the annular protuberance.  
All this part of the encephalon, M. Serres  
remarks, was destroyed by the cavity which  
contained in its centre the clot of blood;  
and thus was explained the general palsy  
produced by a single attack, which, reason-  
ing from former observation, he had re-  
ferred to two hemiplegias.

Such, says M. Serres, are the principal appearances within the cranium of persons who have died of palsy, or of apoplexy and palsy combined, especially in cases of hemiplegia. M. Serres positively states, that in all cases in which he had remarked that palsy was absent during the course of apoplexy, the brain was uninjured, but the meninges were affected in different degrees, and with these different degrees of alteration the different kinds of effusion coincided. On the other hand, he asserts that in apoplexies accompanied with palsy, he found an evident and constant relation betwixt these cases, and disorganization of the encephalon. M. Serres maintains that all apoplexies have their seat in the encephalon, or in its membranes.

Much læsion of parts within the cranium have been sometimes found after paraplegia, as it occurs in adults, independent of a diseased state of the spine; for an account of which I refer to Dr. Baillie's paper in the sixth volume of the Medical Transactions of the College of Physicians, and to Mr. Copeland's treatise.

M. Rochoux, a French physician, in his account of organic læsions observed after death from apoplexy, speaks of effusions of blood in the brain, which, he says, are generally in the substance of the brain, and contained in sacs. This always happens, he asserts, in those palsies which follow apoplexy, and the number of caverns always corresponds with the number of attacks. The blood, in these cases, he says, is absorbed, and the sides of the caverns approach each other, and, as it were, cicatrize.

M. Riobe, house-surgeon of the hospital called La Charité, at Paris, though entirely unacquainted with the observations of M. Rochoux, has taken a similar view of the subject, has very diligently observed the various circumstances which accompany cerebral effusions, and has very ingeniously explained the particular manner in which blood effused in the brain becomes surrounded with a membranous substance forming a cyst, by means of which it is absorbed, and taken back into the circulation. M. Riobe adduces a number of cases of recovery from apoplexy, in



which, after death from subsequent attacks of that or other diseases, dissection has shown appearances fully confirming his opinions on the subject. M. Riobe, from his reasoning and observations, draws the following conclusions: that apoplexy, in which blood has been effused in the middle of the brain, is curable; that sometimes a particular membrane is developed around the effused blood; that this membrane secretes a serous fluid which dilutes and dissolves the effused blood; that the blood thus dissolved is absorbed and entirely taken up by the vessels of this adventitious membrane; and that a great number of palsies, of which the effused blood in the brain is the exciting cause, gradually disappear in proportion to the absorption of the fluid. M. Riobe thinks that this membrane, after the absorption of the blood, sometimes gradually diminishes, and is at length effaced, or forms an adhesion by which the cerebral substance, torn asunder in the apoplectic fit, becomes re-united. He informs us, that in some cases, several of these cysts have been found in the brain

of apoplectic persons answering to the number of apoplectic attacks previous to that which proved fatal. Two, three, and even four such cysts found in the brain, have shewn that the patient, examined after death, had been two, three, or four times struck with apoplexy. For a more particular account of the observations of M. Rochoux, and M. Riobe, I refer to their respective works.

What has been already said in the history of palsy renders the *diagnosis* so clear, that we can be in no danger of confounding this disease with any other.

With respect to the *prognosis* in palsy, we find a great variety of opinions in different authors. The ancients seem very generally to have considered palsies of long standing as incurable. Forestus observes, that this disease is seldom, if ever, cured in old persons who, having lost their native heat, become weak, and generate viscid and cold humours. He thinks, however, that there is greater hope for paralytic persons when the disease happens in summer or in spring, than in winter or in

autumn.\* Boerhaave was of opinion that palsies in the upper parts of the body, those nearest to the head, are more dangerous than those situated in the lower extremities. He says, that all palsies gradually descending from superior to inferior parts, are favourable in proportion as they leave the superior parts more free from the disease; but all palsies ascending from the inferior to the superior parts, are of the worst kind, and threaten† apoplexy. Sauvages, and many others, are of opinion that the more general palsies are scarcely ever perfectly cured. Dr. Abercrombie, however, takes a more encouraging view of the subject. He says, perhaps we have been too much in the habit of believing that paralysis of any considerable standing depends upon a fixed and irremediable disease of the brain. Many cases are on record, he observes, which tend to shake this opinion; some recovering very gradually, so as in a few weeks or months to leave no trace of the disease. Dr. Aber-

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\* Forestus, Ob. 82.

† Boerhaave, De Paralyti, p. 706.



crombie thinks that paralysis, even of long standing, sometimes depends upon a cause which is capable of being removed almost in an instant, and he adduces examples in support of his opinion, which, he says, hold out to us a most interesting subject of research in the treatment of these, which of all diseases are usually considered as the most hopeless.\*

It has been observed, that palsy in the limbs, when they are much wasted, is most difficult to cure.†.

As far as my own experience enables me to judge, the prognosis in the general palsies must be almost always unfavourable. I have seen many cases of recovery from palsy in a very considerable degree ; but I do not recollect more than one or two cases of a complete restoration, both of sensation and motion, in the whole of the side of a person who had been affected with a perfect hemiplegia. When this species of palsy depends upon an injury done to one side of the brain, which is almost al-

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\* Abercrombie, p. 69.

† Portal.

ways the case, I am inclined to think that the mischief is seldom, if ever, entirely obliterated, and the disease wholly removed. On the dissection of persons after palsy, either evident disease is found in the brain, or marks of the existence of former disease, which had given occasion to the complaint; and although Messrs. Rochoux and Riobe have adduced good reasons for believing that fluids effused have been absorbed, and that cavities in the brain have been sometimes closed, yet the mischief may not have been completely removed, nor the brain perfectly restored to its healthy state; and whilst any morbid cause capable of producing palsy continues in any degree to exist, it is natural to imagine that palsy in some degree would remain. Reasoning from appearances after death from palsy, would lead us to conclude that the disease almost always, in a greater or less degree, does remain. Instances may, no doubt, be adduced of perfect recovery from palsy; but I am persuaded that such are of very rare occurrence. If persons affected with hemiplegia do not become apoplectic in a

short time, it often happens, that after a certain degree of amelioration, the disease becomes stationary, or very gradually proceeds, even for several years, before it terminates fatally.



## CHAP. VII.

*Treatment of Palsy.*

IN stating the treatment of palsy in general, I shall first mention that which should be employed in *hemiplegia*, the most common, and the most important species of the disease. Hemiplegia, as we have observed, is, in a very great proportion of cases, the consequence of apoplexy; therefore, the plan to be adopted, both for the prevention and the cure of the former of these diseases, is very much like that recommended for the latter; indeed, it differs chiefly in degree.

With the intention of preventing the accession of hemiplegia, moderate, or, in some cases, low diet, and gentle exercise, especially in the open air, are recommended, and will probably prove useful. The exercise ought to be such as may encourage perspiration, without heating the

body, or hurrying the breathing, and this some mode of gestation will afford. For persons not liable to fits of giddiness, and who are accustomed to riding on horseback, this exercise is the best. — Walking, with an attention to the circumstances above mentioned, may be tried; but in old men, and in men of corpulent habits, bodily exercise ought always to be very moderate.

“ Where a predisposition to apoplexy is shown in early life, it is probable that a low diet, with a good deal of exercise, might prevent the disease; but when persons become advanced in life, before they take precautions, and are, at the same time, of a corpulent habit, and accustomed to full living, it might not be safe to put them upon a low diet; it may be sufficient to reduce their mode of living, especially with respect to animal food. All heating liquors should be abstained from, as much as former habits will allow; and the smallest approach to intoxication should be carefully shunned. For ordinary drink, small beer is to be preferred to plain water, as the latter is more ready to occasion costive-

ness, which, in apoplectic habits, is to be carefully avoided.”\*

In the apprehension of a paralytic attack, great attention ought to be paid to the state of the bowels, which should be kept regularly open by gentle laxative medicines.

Under these circumstances, I am of opinion that a discharge from the neighbourhood of the head should be excited and preserved, by means of blisters, issues, and setons. Such discharges are safe, and, I believe, powerfully prophylactic.

On the actual accession of hemiplegia, the treatment ought, at least in some degree, to be that formerly recommended in apoplexy, as the causes which, by their general action, produce the former, by their partial action give occasion to the latter. Dr. Cullen is of opinion, that in a hemiplegia which has subsisted for any length of time, there is probably an effusion either sanguineous or serous, and M. Serres almost always found a quantity of blood in cavities of the brain, which had been produced by

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\* Cullen.



injuries done to that organ. Upon the supposition that hemiplegia depends on partial pressure upon or in the brain, the great object should be to remove that pressure, if possible, or to diminish its degree; which, perhaps, cannot be more rationally attempted than by depletion, by blood-letting, purgatives, emetics, diaphoretics, sialogogues, revellents, and discharges by means of blisters, issues, and setons. — The ancient physicians very commonly prescribed in hemiplegia the evacuation of blood, both general and topical; but especially the latter. Aretæus, Ætius, and Paulus Ægineta speak highly of the advantages of topical blood-letting by cupping the head itself, or the neighbouring parts, but in this practice they advise caution, and that the evacuation of blood should be moderate. Among the moderns, the advocates for blood-letting in apoplexy also recommend it in hemiplegia, but with caution; and those who are doubtful as to the propriety of this evacuation in the former disease, or who are unwilling to employ it freely, wholly forbid it in the latter. For-

restus\*, under certain circumstances of palsy, admits the propriety of taking away a small quantity of blood, but some practitioners advise a free use of the lancet in this complaint. Mr. Hunter was of opinion that in hemiplegia we ought to extract blood very largely, especially from the temporal arteries. The following case is illustrative of the good effects of large and repeated bleedings, together with cathartics, in palsy. “An officer of the navy, of middle age and full habit, after having been drinking freely for about a week with some of his shipmates, and for three days having been much intoxicated, suddenly was attacked with hemiplegia. His tongue was affected so that his speech was almost unintelligible, and an universal tremor pervaded his frame. In this case the external jugular vein was opened, and about three ounces of blood were with difficulty obtained. A vein of the

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\* In plethora tamen et sanguinea resolutione, contusioni, ictu, aut casu, de venæsectione nulla est dubitatio; sed in omnibus ad exiguam quantitatem. Lib. x. obs. 75.

left arm was then opened, and eighteen ounces of blood were allowed to flow in a full stream : while the blood was yet flowing, the tremor disappeared, and his articulation became more distinct. Bye and bye he became faintish, and was laid in bed. After recovering a little, he swallowed twenty-five grains of calomel. In two hours afterwards, fourteen ounces more of blood were taken from the arm. On the morning following the evening in which the disease made its attack, his face was less drawn to one side, and he could move the whole right arm and leg, though with considerable difficulty. This improvement he dated from a most copious stool in the night, after which he had two more evacuations, all the three being of a very dark colour and most offensive smell. On the evening of this day, however, he again lost the power of moving the right limbs, and the face was considerably drawn on one side. Eighteen ounces of blood were then drawn, in a full stream, with considerable advantage. On the evening of the succeeding day he had in a considerable degree lost the power of moving the right limbs, and his face was



redder than usual. Fourteen ounces of blood were then drawn from the arm in a very large stream, and soon after the bleeding he acquired the power of moving the arm; twenty grains of calomel were given.”\* From this time he continued to improve, and about nine days from the paralytic attack he was able to walk without any difficulty, and at the end of a month he was quite well. In addition to the calomel, castor oil and a considerable quantity of other purgative medicines were given.

In the two following cases, venesection in hemiplegia was employed by Dr. Abercrombie with great success. “A man aged thirty-five, of a full habit, and intemperate, was suddenly seized with loss of speech and perfect palsy of the right side. Being bled to twenty-one ounces he spoke more distinctly. The bleeding was repeated after two hours, and he took strong purgatives. Next day the motion of the right side was considerably improved, but becoming more paralytic towards the

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\* Medical and Physical Journal.

evening, he was bled again to eighteen ounces. Purging was repeated, with blistering on the neck. On the third day, he was again better in the morning, and rather worse at night, and was again bled to fourteen ounces. By purging and spare diet, he then mended progressively, and in a few days was free from any paralytic symptom. An old and very poor woman, aged about seventy, thin, pale, and withered, having gone out to bring water from one of the public wells, on the morning of the 2d July 1818, fell down in the street speechless, and completely paralytic on the right side. Nothing was done till about two o'clock P. M., when she was found stupid, but not comatose; yet completely speechless and paralytic; her pulse of good strength, and about ninety-six. She was bled to fifteen ounces. Purgative medicine was ordered and cold applications to the head; on the 3d she was considerably improved both in speech and motion, but having become rather worse at night, the bleeding was repeated, and purgative medicine continued. From this time she improved gradually; at the end of a week

she was able to walk with a little assistance, and speak pretty distinctly; and by the end of another week she had entirely recovered her former health.”\*

In Dr. Home’s clinical experiments and histories, a case of complete hemiplegia is mentioned, which was cured by a free evacuation of blood. “The patient was bled four times in seven days, and after each bleeding the symptoms gradually diminished. The blood was always sizzly. Nothing else was done, except that a little nitre was given, and the patient’s body was kept open by clysters; all the symptoms except a head-ache disappeared.”† In the London Medical and Physical Journal for November 1816, we have an account of a speedy cure of complete hemiplegia by a very large evacuation of blood. On the first day of the attack thirty-eight ounces of blood were at once drawn from the arm of the side affected; on the second day twenty ounces from the other arm, and on the third day the disease disappeared. Many similar cases might be adduced.

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\* Abercrombie, p. 15.

† Home, p. 256.



My own experience on this subject, is in favour of the practice of blood-letting in hemiplegia, when accompanied with strongly marked apoplectic predisposition; and I do not recollect to have observed any mischief produced by it under such circumstances. I once, indeed, saw this species of palsy terminate in a fatal apoplexy soon after an evacuation of blood, in the case of a gentleman seventy years of age, of a plethoric constitution, and free mode of living; yet I am convinced that bleeding, all circumstances considered, was in this case highly proper; nay, it is not very improbable I think, that by a more copious evacuation of blood, the total abolition of sensation and motion might have been prevented. We have some cases on record, in which hæmorrhage from the nose, or from the hæmorrhoidal or menstrual vessels, have relieved persons affected by paralytic symptoms, especially when connected with the stoppage of the piles or the menses. With respect to the treatment of hemiplegia, as far as relates to the propriety of blood-letting, and the extent to which depletion by that means may be safely

carried, it appears to me extremely difficult, if not impossible, with propriety to lay down any absolute general rules. Each individual case must be viewed in all its circumstances, and by a careful consideration of them, our practice should be regulated. Before we prescribe blood-letting in hemiplegia, we must investigate the age, strength, general constitution, and habits of the patient, and above all, the actual symptoms of the disease. In early, or even in somewhat advanced life, if plethora and the various symptoms formerly enumerated as tending to apoplexy were present, I should not scruple to bleed freely, both generally and topically. On the contrary, in great age, debilitated leucophlegmatic habit, dropsical tendency, &c., I should think it right to abstain altogether from this, and from every other powerful mode of depletion, unless there was an evident great determination of blood to the head, marked by flushing in the countenance, throbbing of the arteries, redness of the eyes, &c. In doubtful cases, indeed, the safest plan would be to evacuate blood only topically by leeches

or cupping glasses, and to proceed as circumstances may direct, carefully watching from time to time the effects of the practice.

M. Serres in some cases prescribed, with advantage, the opening of a jugular vein in hemiplegia; but the evacuation of blood, either general or topical, seems not to have been often recommended in these cases either by him or his colleagues in the Hotel Dieu, and l'Hopital de la Pitié.

With regard to depletion by purgative medicines in this disease, less caution is required. In all cases of hemiplegia, a free evacuation of the bowels is, I believe, not only safe, but necessary. Boerhaave was a great advocate for the use of purgatives in palsy. He says they do more good in certain cases of this disease than all other remedies put together, provided the body can bear their power: and Van Swieten asserts, that he has cured many palsies by hydragogue cathartics, repeated at proper intervals. Forestus advises opening medicines in palsy, beginning with eccoprotics and proceeding to the employment of



drastics. He recommends that they should be administered in the form of pills. \* All writers agree as to the propriety of keeping the body open in hemiplegia, but the cathartics should be suited to the nature and circumstances of the case. The neutral salts and other purgatives called refrigerants, may be given where there is much determination of blood to the head, and in full habits ; but in debilitated, leucophlematic, and dropsical cases, the more stimulating purgatives, such as aloes, calomel, scammony, colocynth, jalap, &c. may with more propriety be administered.

The French physicians lay great stress on the administration of stimulating clysters in the cure of palsy.

As to the use of *emetics* in hemiplegia, I wish to remark, that the generality of the practitioners of the present day seem to have less scruple in prescribing them in this disease than in apoplexy. Dr. Heberden, however, says, that we ought not in any species of the disease to excite vomiting

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\* Magis conveniunt pilulæ.

by *strong* medicines. He seems to think emetics useful only by appeasing nausea and removing any thing offensive from the stomach.\* Celsus under certain circumstances recommends emetics †; and Forrestus thinks vomiting useful in all palsy, but that of the tongue.

In cases of debility and diminished action, where there appears to be no determination of blood to the head, emetics may possibly be beneficial by their exciting power. The French physicians are very partial to the exhibition of these remedies, and in the treatment of hemiplegia they seem to place great dependence upon them.

M. Serres and M. Lerminier seem to have prescribed emetics almost indiscriminately in hemiplegia. Tartarized antimony was given by them dissolved in a large quantity of water, and in various other forms. They found, however, that this medicine produced but little effect, unless in large and repeated doses, the stomach

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\* Heberden, p. 302.

† Post cœnam utilis vomitus.

and bowels, under these circumstances, seeming to be in a great degree insensible to its action. The practice of giving emetics in hemiplegia is not very common in this country, yet it is recommended by some respectable practitioners, who are of opinion that the agitation produced by vomiting may be of use. Van Swieten thinks that emetics, as well as sternutatories, are not always safe.\*

This practice may, perhaps, in some cases, be found useful, but in hemiplegia after apoplexy, especially in the beginning, and in plethoric habits, I should not venture to recommend it. The reasoning and facts adduced, respecting the propriety of the employment of emetics in apoplexy, apply also to hemiplegia. They have been given considerably in detail, in the first volume of this work, to which I beg leave to refer.

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\* Verum satis patet validissimos illos concussus per vomitoria et sternutatoria adhiberi non posse, nisi viscera bona fuerint; vires satis firmæ, et nullus metus sit apoplexiæ a plenitudine vasorum, quæ rumpi possent in encephalo inter vomendum vel sternutandum.

*Van Swieten, § 1068.*



In addition to depletion by blood-letting, purgatives, and emetics, in hemiplegia, some authors mention diaphoretics, diuretics, and sialagogues ; but no great dependance seems to have been placed upon them, nor does my own experience enable me to recommend them.

The above-mentioned observations concerning the treatment of hemiplegia, relate to the disease in its early state, and more especially while connected with apoplexy, under which circumstances, the practice may, in a certain degree, and with certain cautions, be that formerly at length described, when I treated of apoplexy. When, however, the disease has subsisted for a length of time ; when the apoplectic symptoms have disappeared ; when plethora, or marks of determination of blood to the head are no longer present, our mode of proceeding should be different ; and certain remedies may be prescribed, which, under other circumstances, would be dangerous. These remedies are chiefly stimulants externally applied, or internally taken ; of these we have a very great variety. The external applications are fric-

tions, blisters, sinapisms, fomentations, and warm bathing, electricity and galvanism. The chief stimulating internal medicines are volatile salts, acrid vegetables, aromatics, essential oils, and resinous substances.

The antients, and indeed the more early writers among the moderns, seem to have erred by a too early and indiscriminate employment of stimulants in palsy, which they always considered as a disease of debility, coldness, and obstruction. Dr. Cullen has made some useful distinctions respecting the treatment of this disorder. He is of opinion, that stimulants are highly dangerous in all cases of hemiplegia, succeeding to a paroxysm of complete apoplexy, or coming upon persons of apoplectic temperament, or with symptoms of apoplexy, from compression; under different circumstances, he thinks that stimulants may be advantageously prescribed.

Among the means of removing the torpor of palsy, the excitement of passions of the mind have been mentioned by authors, particularly sudden anger or terror.

Van Swieten, from Schenkius, relates the case of a man who, by sudden terror, recovered from hemiplegia, with which he had been affected for many years.\*; and Boerhaave quotes from an Arabian author an account of a recovery from paralysis of one side, by a sudden emotion of the mind.† Similar instances might be adduced from authors; but from a knowledge of them we derive no practical advantage: the excitment of the passions not being sufficiently under our management and controul.

There is a story related by Herodotus, respecting the restoration of the power of

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\* *Alteri per plures annos jam hemiplectico, incassum tentatis omnibus auxiliis, dum domus deflagrabat, in quo decumbebat miser, ilico redit motus, et a summo ædium præcipitem se dedit, posteaque liber ab hoc morbo vixit.*

† *Prostat hic loci in Bibliotheca publica liber Arabicus, in quo scribitur, amatissimam Caliphi uxorem laborâsse paralysi unius lateris: Medicus consultus dixit se posse sanare, nisi metueret iram Principis; ille curam sibi gratam fore respondit; Medicus ergo conabatur pedes ægræ attingere, quod in Asia est signum impuditiæ, unde illa valde irata voluit Medicum a se abigere, et hoc violento nixu mox sanata fuit.*

*Boerhaave, De Morb. Nerv. p. 688.*



speech to the son of Cræsus by sudden terror, which Boerhaave has quoted in illustration of this subject ; but, as it is in some respects contradictory, I do not here introduce it.

Of the stimulants above mentioned to be applied externally, there perhaps is none more safe and efficacious than friction by the hand, or by the flesh brush. I have, in several instances, seen very beneficial effects from a long perseverance in the use of this simple remedy. Friction may be rendered more powerful by stimulating liniments, of which we have many different kinds, such as the fossil acids and volatile alkalies, combined with oil or lard, with a view of rendering them less acrid and corrosive ; essential and distilled oils ; preparations from resins, gum-resins, &c. — Among the useful external applications for the purpose of restoring action and sensation, we may reckon blisters and sinapisms, especially the latter, which are perhaps the most powerful rubefacients that we can employ. Blisters and sinapisms are very generally recommended in palsy, because they are considered safe

and efficacious. One of the Greek physicians, however, very properly says, that when parts are entirely deprived of sensation and motion, we ought to be careful that sinapisms do not operate too much ; the patient, through loss of feeling, not being able to judge of their effects.\* Some practitioners are in the habit of applying blisters, or other stimulants to the head, immediately after the accession of hemiplegia ; but I am of opinion, that we ought not to make such applications in plethoric constitutions, and especially when the disease is the consequence of apoplexy, till some blood has been taken away ; and, I think, that when such stimulants are used, they should be applied on that side of the head which is opposite to the paralytic side ; because anatomists have ascertained, as above-mentioned, that in a very great proportion of instances, the cause of hemiplegia is seated in some part of the brain, opposite to the side affected. Celsus recommends, in these cases, the

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\* Paul Ægineta, lib. iii. c. 18.

application of nettles to the surface of the part affected, and also mustard.\*

When stimulants actually produce violent inflammation of the skin of the part to which they are applied, it is thought that they do not do so much good as a more frequent repetition of a more moderate stimulus. With respect to the whole of them, it has been remarked, that they affect the part to which they are applied, much more than they do the whole system, and are therefore safer in ambiguous cases; but, for the same reason, they are less efficacious in curing a general affection. The external remedies which may be applied to affect the whole system, are heat, cold, and electricity.†

In the treatment of palsy, much stress has been laid upon a moderate application of heat by bathing, especially in certain

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\* Prodest etiam torpentis membri summam cutem exasperâsse, vel urticis cæsam, vel imposito sinapi, sic ut ubi rubere cæperit corpus, hæc removeantur.

*Celsus*, lib. iii. c. 27.

† Cullen.



mineral waters, such as those of Bath and Buxton. Several years ago a narrative of the efficacy of the Bath waters in various kinds of paralytic disorders, was published ; in which we are informed, that betwixt the years 1775 and 1785, great relief, and, in some cases, perfect recovery, followed the external and internal administration of those waters. The cases of fifty-two persons affected with palsy are particularly related, of which some were cases of hemiplegia following apoplexy, and others hemiplegia without any assignable cause. A great number of these persons were dismissed cured. Some physicians have recommended the sudden application of *cold* water as a stimulant likely to be useful in hemiplegia. Dr. Cullen inclines to favour this practice. He says, cold applied to the body for any length of time is always hurtful to paralytic persons ; but if it be not very intense, nor too long continued, and if, at the same time, the body be capable of a brisk re-action, such an application of cold is a powerful stimulant of the whole system, and has often been useful in curing

palsy ; but if the power of re-action in the body be weak, cold may prove hurtful.\*

Some practitioners speak doubtfully, some unfavourably, both of warm and cold bathing in palsy. On this subject I cannot give an opinion from my own experience ; but, on the whole, the observations which others have made, would lead me to prefer, in palsy, the application of warmth by bathing, to that of cold ; as the former is more under our command than the latter. If cold does not produce re-action, or if it give occasion to a very great re-action, it would, probably, do mischief.

Among the stimulating applications most strongly recommended in hemiplegia and other palsies, electricity may be mentioned. This powerful agent has been employed in various diseases, especially in paralytic affections, by the French and other continental physicians ; and, as they inform us, with the greatest success.† Many mem-

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\* Cullen, vol. iii. p. 216.

† A book was published at Paris, in two volumes, so long ago as the year 1763, under the title *Recueil sur l'électricité médicale dans lequel on a rassemblé les principales pieces publiées par divers savants sur le moyen de guerir en electrissant les malades.*

bers of the Royal Society of Medicine at Paris, particularly a M. Mauduyt, made several experiments which appeared to be much in favour of the practice. The Abbé Nollet, the Abbé Lans, professor of experimental philosophy at the university of Perpignan, M. Segaud de la Fond, M. Jallabert of Geneva, and various German philosophers, speak highly of the efficacy of electricity as a remedy for various complaints.

M. Jallabert, professor of philosophy and mathematics at Geneva, was the first person who tried electricity in paralytic affections. He performed a cure on a locksmith, whose right arm had been paralytic fifteen years, occasioned by the blow of a hammer. He was brought to M. Jallabert on the 26th of December, 1747, and was completely cured by the 28th of February following. The report of this cure performed at Geneva, engaged M. Sauvages of the Academy of Montpellier, to attempt the cure of paralytics by electricity, in which he had considerable success. Many, however, were electrified without any advantage. In the year 1757, Mr. Patrick Brydone performed the complete cure of a



hemiplegia, and, indeed, an almost universal paralytic affection, in about three days. The patient was a woman, aged thirty-three, and the palsy was of about two years continuance.

Of the patients treated by M. Mauduyt, ten were materially benefited by the application of electricity, and a great proportion of those under the care of the Abbé Lans were restored to health by its use. De Haen was a warm advocate for the practice, and asserts that it never does harm. Several instances of the good effects of electricity in this disease are mentioned in the Transactions of the Royal Society, and in various medical journals, and other publications ; but notwithstanding the numerous strong testimonies in favour of the employment of it in palsy, it seems of late years to have somewhat fallen into disrepute.

That electricity may be hurtful, and even in some cases, in which analogy would lead us to promise ourselves it might be of use, is evident from many cases, and particularly from one related by Dr. Hart, of Shrewsbury, in a letter to Dr. Watson, which was

read at the Royal Society, November 14th, 1754.\*

Dr. Franklin electrified several paralytic persons in America, without any material advantage; and Mr. Cavallo, who has written a treatise expressly recommending the application of electricity as a remedy in various diseases, admits that it has often proved inefficacious, and sometimes fatal. He observes, that, in general, the application of electricity has been found to be of very little use in cases of disease of long standing. Van Swieten says, numerous experiments respecting the power of electricity, as a remedy, have been made by celebrated men, which prove both its great efficacy, and its danger if such experiments are not conducted with prudence; yet much good may be expected from it in paralysis, as appears from direct and faithful trials of its power. Applied in a certain manner, electricity is a most powerful stimulant to the nervous system, and therefore much has been expected from it in the

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\* Priestley's History of Electricity, p. 408.

cure of this disease ; but as it is also a stimulus to the sanguiferous system, it has often been hurtful in those palsies which depend upon a compression of the brain, and especially when it has been so employed as to act upon the vessels of the head. It is only to be considered safe when its operation is confined to parts somewhat remote from the head ; and as, when very strongly administered, it is capable of destroying the mobility of the nervous power, it should be used with moderation. Advantage is to be expected rather from a repetition of it, than from its force ; and it seems particularly suited to the cure of those palsies which have been produced by the application of narcotic powers.\* Where electricity has been prejudicial, it has probably been too violently applied. No greater force should be used than that which may be sufficient to remove, or alleviate disease ; thus, shocks should never be used when a cure may be effected by sparks ; sparks should be avoided when the

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\* Cullen.



required effect can be obtained by the wooden point, and if the metal point be thought sufficient, it should be preferred.\*

From my own observations of the effects of electricity in paralytic affections, I venture to recommend a trial of it under the circumstances, and with the cautions point-

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\* Mr. Cavallo mentions a curious influence which electricity has upon parts to which blisters have been applied. He says, "one circumstance attending some of the preceding cures, particularly that of the paralytic, related by Mr. Jones, was a fresh and copious discharge of the blisters which had been previously applied to the patients. This, I think, seems to be a pretty general consequence of electrification; at least, I have myself known many instances of it; particularly in one gentleman, whom I electrified for a paralytic complaint, and who had a blister applied to the back part of his neck. He informed me, that, in the night after his being electrified the preceding day, he found a much more copious discharge from the blister than at other times; though the operation was no more than his standing, for about a quarter of an hour, on the insulated stool, while sparks were drawn from the side of his face. From hence it appears not improbable, that, in some cases, blisters may be attended with peculiar benefit during a course of electrical treatment; in others, perhaps, it might be worth while to make use of electricity, merely to obtain a favourable discharge from the blisters." P. 67 and 68.

ed out. I have in many cases seen it materially useful, and I do not recollect a single instance in which it appeared to do mischief. Although Dr. Cullen, as above mentioned, places more dependence upon a repetition of electricity, than upon its force, I wish to observe, that from experience, it appears to me to be chiefly serviceable on its first application, and that its beneficial effects are by no means proportioned to the length of time of the employment of it. Dr. Franklin remarked, that the paralytic persons whom he electrified were generally restored for a few days in the beginning, but that they afterwards either did not mend, or that they relapsed into their former state.

I saw some years ago, a case of complete paraplegia, in which the good effects of electricity were at first extraordinarily great, but they were not permanent; for though the application of this power was for a considerable time continued, the patient experienced a diminution, rather than an increase of sensation and motion, in the parts affected.

Dr. Bardsley and others, express them-

selves strongly in favour of the employment of *galvanism* in paralysis. Dr. Bardsley relates some well-marked and decisive instances of the successful application of it in various forms of this disease, which he thinks will serve to encourage further trials, and consequently extend our limited knowledge of its medical powers.\* In the application of galvanism in these cases, Dr. Bardsley recommends the method employed by Mr. Wilkinson; for instance, in a case of hemiplegia of the right side, accompanied by vertigo, loss of memory, and involuntary discharge of urine, he began with half a dozen plates (of two inches and a quarter square), and applied the conducting wires in such a manner, as to direct the galvanic influence through the brain. The sensation was powerful and unpleasant, but by degrees the patient was able to bear the power of a dozen plates. The galvanic fluid was likewise directed along the spine, and the upper and lower extremities, in as powerful a degree as the patient's feelings

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\* Bardsley's Medical Reports, p. 183.



would admit. In about a fortnight this person became entirely free from any appearance of disease, except a slight retraction of the muscles of the face, which was not attended with pain or any inconvenience. \*

For a minute account of the cases of palsy under the care of Dr. Bardsley, treated by galvanism, particularly of one, most singular and deplorable, to which he calls our attention, as furnishing an unequivocal testimony in favour of the practice, I must refer to his work. Dr. Bardsley draws from his experiments the following general conclusions : — 1. That galvanism, judiciously administered, is a safe and powerful remedy in most paralytic diseases. 2. That as far as three comparative trials will allow an inference, the efficacy of galvanism in paralysis is superior to that of electricity. 3. That galvanism agrees with electricity in its sensible effects upon the body. 4. That when the brain is required to form part of the circle,

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\* Medical Reports, p. 186, 187.

the galvanic influence ought to be very cautiously administered. 5. If no sensible advantage accrue from a steady, and properly regulated application of this remedy, after a trial of a week or ten days, in paralytic affections, especially where the brain is operated upon, its use ought to be laid aside. 6. When the pulse has become quicker and firmer, the local, as well as general temperature of the body increased, the feelings, both mental and corporeal, somewhat enlivened, and the altered secretions better regulated, it is proper to infer from such indications, that galvanism may be persisted in with a fair prospect of ultimate success. 7. Where both sensibility and irritability are so greatly exhausted, as not to render the patient susceptible of the galvanic stimulus by the ordinary means; or where, from the unusual thickness of the cuticle, it forms a barrier to the transmission of the fluid, it will be necessary to excoriate the surface by blistering ointment, and apply the metallic points to the raw skin; but the pain and agitation frequently induced, by administering the remedy, through so sensible a medium, must be

guarded against, by adapting the number of plates to the increased degree of sensibility. Dr. Bardsley states, that the galvanic stimulus is an efficacious, though not a certain remedy in paralytic affections; and he is inclined to think, that in all cases which appear to originate solely from a diminished excitement in the sensorium, galvanism is to be preferred to electricity.

Mr. Partington, whose opportunities of observing the effects of electricity, and of galvanism, are very great, informs me, that his experience induces him to trust rather to the former of these powers than to the latter. He thinks, that electricity is more efficacious, and more safe, than galvanism, especially in its application to the head and neighbouring parts. He is willing, however, to allow that advantage may occasionally arise from the employment of both these powers.

In some cases of obstinate palsy, the actual cautery, we are told, has been successfully employed. Prosper Alpinus says, that the Egyptians prescribed it with great advantage in apoplexy, palsy, and epilepsy. And we have an account illustrative of the



curative effects of the application of burning moxa in a case of general palsy, by Dr. Lafosse, in the *Athenée de Médecine*. In this case, the most powerful tonics had been administered without any benefit; when, despairing of success from the employment of internal remedies, M. Dupuytren advised the application of burning moxa upon each side of the vertebral column, near the first and second dorsal vertebræ. This was attended with immediate advantage. The sloughing of the escars produced by the moxa was hastened in order immediately to establish a drain from the wounds. Under this treatment the patient rapidly amended, and was, in a short time, restored to perfect health. Might not a discharge from the spine, produced by other means, have been equally successful in this case? Was not the application of the moxa preferred on account of the quickness of its operation?

In those cases of hemiplegia, for which stimulants are thought useful, a great variety of internal medicines are recommended, in addition to the external means above mentioned, such as acrid vegetable

and animal substances, volatile salts, essential and distilled oils, resins and gum-resins, &c. Among the principal vegetable substances prescribed as stimulants in palsy, we may reckon the *rhus toxicodendron*, or poison oak, the *nux vomica*, the root of horse-radish, and the seeds of mustard.

The leaves of the *rhus toxicodendron* have, in many instances, been given in hemiplegia with advantage, and in some with complete success. Dr. Alderson of Hull has published an account of the use of this remedy in palsy, as employed by himself and several of his medical friends. This medicine should be used cautiously, as very powerful effects sometimes follow the administration of it, even in small doses. Half a grain of the powdered leaf may be given three times a-day, and the quantity of it may be increased to two, three, four, or five grains, carefully watching its effects. Some practitioners have exhibited this medicine in much larger doses. A very common effect of it, even in small quantity, is a twitching or convulsive motion, or a sense of tingling or

pricking in the paralytic part ; and in these cases its efficacy is most conspicuous. Dr. Alderson, in a case of paralysis of one side, with impaired recollection, found that, on the second day after the exhibition of this remedy, the patient was affected with a sudden convulsive twitching, or involuntary motion in certain muscles of the affected side ; and that, immediately afterwards, those muscles became obedient to the will. On every succeeding day he felt some muscle or other convulsively moved ; and it was always remarked that he possessed the power of voluntarily employing all those muscles that had been once convulsively affected in consequence of the toxicodendron. He regularly continued the medicine, and gradually increased it to one grain every four hours, taking care always to add to the dose, till he found that some convulsive action was produced. In the course of three weeks, in which time every muscle that had been affected with palsy had felt the influence of this powerful drug, the patient regained the free and perfect motion of his leg and arm, and recovered the full



enjoyment of his mental faculties.\* The cases adduced by Dr. Alderson, illustrating the good effects of the employment of the *rhus toxicodendron* in hemiplegia, are very striking, and afford encouragement to a trial of it in those cases of palsy where the employment of stimulants is indicated.

Of late years the *nux vomica*, a medicine a good deal resembling the *rhus toxicodendron* in its effects on the constitution, has been tried in palsy. The *nux vomica* has been very generally considered as poisonous; but in small quantities it may be taken with safety and advantage. Dr. Fouquier, one of the physicians of the *Hopital de la Charité*, at Paris, has published several cases of palsy, in which he tried this remedy with very great success. M. Fouquier was in the habit of giving it in the form of powder and extract, beginning with small doses, and gradually encreasing them as far as fifty grains in a day. In a short time after it has been taken, spasmodic contractions of the muscles, he

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\* Alderson, p. 23.

says, in a greater or less degree, or more or less general, are produced. Among the unpleasant effects of the *nux vomica*, especially in large doses, delirium, a sense of heat and oppression, and anxiety, may also be mentioned. Sometimes general tetanus, with loss of speech and the power of deglutition, accompanied with difficulty of respiration, pulsation of the heart, and dysuria, have been experienced; whilst the good effects of this remedy are manifested by a gradual return of power in the paralytic parts. For a full account of Dr. Fouquier's facts and reasoning in favour of the employment of the *nux vomica* in palsy, I refer to his publication.

Dr. Dickson, of Clifton, in a communication with which he has favoured me on this subject, relates two cases, in which he had tried the *nux vomica* in hemiplegia with some advantage. The first patient for whom he prescribed this medicine, was a man 44 years of age, of a robust, full habit, who had been affected with hemiplegia for about ten weeks. "The arm in this case," says Dr. Dickson, "was perfectly useless, and the fingers remained

constantly bent, and could not be extended without great difficulty and pain. He could neither protrude nor bear his weight upon the limb, which was dragged after him, or lifted on his being moved. Having tried various other remedies, he commenced with taking two grains of the extract of *nux vomica*, in a pill, night and morning, and after having taken six pills, he complained of startings in the affected limb. His toes were extended, and spread asunder occasionally, while in bed, and he could move them, which he could not do before. In about a week he thought himself, and appeared to be, considerably better, and the dose of the extract was increased to four grains night and morning." Although this medicine was at first beneficial, its use was attended with convulsions, which at length became so distressing, that after two months it was relinquished.

The other case in which Dr. Dickson exhibited the *nux vomica*, was hemiplegia of long standing, chiefly affecting the left arm and side. The patient was about 44 years of age, of a very spare habit, and



nearly fatuous. He began with two grains of the extract, which were increased to five grains twice a-day ; but Dr. Dickson, finding that the medicine was sometimes forgotten, and at others given in a double dose, contrary to his positive injunction, durst not venture to push so active a remedy any further. He observes, however, that under even this irregular use, the patient could raise the arm from a horizontal elevation as high as his head, and could open and shut his hand, and grasp a knife, which he was before incapable of doing.

Mr. Rose, of Swaffham, Norfolk, has published two cases of hemiplegia, in which the *nux vomica* was given in very large doses, and with very powerful effects on the constitution, and I here introduce an account of one of them, rather with a view to illustrate the power of the medicine, and the quantity in which it may be given, than in recommendation of it, for Mr. Rose very candidly allows, that “ in the first of these cases effects were produced, some beneficial, and others which could not be renewed with impunity ; whilst, in the latter, effects, powerful, but neither

useful nor prejudicial, were produced." The nux vomica was prescribed on the 28th of March, 1818, in the quantity of three grains in powder three times a-day; and from that time the dose was increased every forty-eight hours, until the 4th of April, when the patient took fifteen grains of the powder for a dose. "When taking the ten-grain doses, slight twitchings of the extremities were produced, and a sensation was felt, as if some fluid was running down the interior of the affected arm." The quantity of the medicine was still increased, so that on the 12th of April, a scruple of it was taken three times a-day; and on the 17th, Mr. Rose reports, "there has been a rapid improvement in the paralyzed arm, for on this day he gets his hand nearly to his mouth, and bends the fore-arm a little upon the arm; he can also grasp any thing placed in his hand."\* On the 18th, twenty-six grains of the powder were exhibited three times a-day, which seem to have produced very violent effects. "I learnt that on the 24th," says Mr. Rose, "his head

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\* London Medical Repository, vol. xi. p. 3, 4.

was very much affected with vertigo, from the medicine, and so much spasm produced in his lower extremities, that he could not walk alone; his wife having led him to the door, and left him standing, a tetanic spasm attacked him, and he fell to the ground backwards." \* Having omitted to take the medicine for a fortnight, he had, during that time, no tetanic symptoms, and the power of the affected muscles increased. On taking the *nux vomica* again, he had, after some time, a return of the faintness, flutterings, and palpitation of the heart, and the powders were discontinued. On the 14th of July, Mr. Rose reports, that "he was pretty well recovered from his late disagreeable feelings; his pulse was again very good; and the power of action continued to be restored to the paralyzed members. As the dose of the drug could not be increased, without producing effects of too serious an aspect; and having seen that during a discontinuance of its use he had continued to improve, I laid it aside."

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\* London Medical Repository, vol. xi. p. 4, 5.



On the 3d of November, the patient called on Mr. Rose, to say, that he continued to improve both in strength and freedom of action, and that he expected to be able to go to day-labour again in the spring. In the second case in which Mr. Rose prescribed the *nux vomica* for palsy, no good effect was produced.

M. Fouquier, in a communication to Mr. Rose, speaks of the *nux vomica* in palsy in very strong terms of commendation; and with respect to the form of administering the medicine, observes, that since the specific effects of the *nux vomica* have been known to him, he has preferred the alcoholic extract in the form of pills, both to the aqueous extract and to the substance in powder; that the effects of the former are more powerful than those of either of the other preparations; and that he begins with one grain twice a day, gradually increasing the dose. He goes on to describe the particular effects of the remedy, which are such as are noticed in the preceding cases. He then says, if too large a dose is given, its effects discover themselves on the healthy members: to obtain a cure, it must be ad-

ministered for a considerable time ; and the dose must be so regulated that sensible effects may be daily produced by it. \*

Dr. Granville, in a communication to the editors of the London Medical Repository says, “ As a collection of well-authenticated cases, corroborating what has hitherto been advanced respecting the medical properties of the *nux vomica*, must be a desirable circumstance for the profession in general on your side of the water, I shall begin this letter by informing you, that Professor Dumeril has had occasion to administer the remedy in question to a woman aged about forty, affected by a complete paralysis of the lower extremities ; and in whom all sort of motion of the diseased parts had been found impracticable. The effects he has obtained from this medicine have been most satisfactory ; and the patient is now able to get out of her bed without any assistance, and likewise to stand a short time on her legs without tottering : he is, at this moment, giving her five grains of

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\* Lond. Med. Repository, vol. xi. p. 11.

the alcoholic extract, which seems to excite so much internal action, particularly by promoting a considerable sensation of heat in the spine, that the patient has requested the dose might not be increased further. It is well to observe, that she had been trying every sort of medicines before with no effect. At the same time I must not conceal, that a similar experiment, tried on the relative of an eminent chemist, my intimate friend, even for a long period, has completely failed in procuring him, even the slightest relief." \*

Since Dr. Fouquier's publication recommending the employment of the *nux vomica* in palsy, several cases have occurred to different practitioners, in which it has appeared to be highly useful in that disease. The following is a short abstract of some of these cases. The *nux vomica* was given to the extent of from four to twenty-four grains of the powder daily, to a man fifty-two years of age, an habitual drunkard, who had for four months laboured under an he-

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\* Lond. Med. Repository, vol. viii. p. 164, 165.



miplegia after apoplexy ; and at the end of a month from the time when he began to take the medicine, he was entirely cured. \*

A man thirty-six years of age, who, from a fit of terror, had become epileptic for twelve years, was from a similar cause affected with paraplegia for four years. After a trial of various medicines, he had recourse to the *nux vomica* ; and, having taken it in the dose of from two to five grains of the extract, for three weeks he had an attack of tetanus, which continued for four hours, and was followed by a considerable alleviation of the symptoms of his original diseases ; from which, by perseverance in the use of the medicine, he wholly and permanently recovered. A female, who had become affected with general paralysis of the limbs, incontinence of urine, and amaurosis, subsequently to the cessation of the menses, took the *nux vomica*, to the extent of from two to twelve grains of the extract daily, for two months, during which time she had

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\* Finot. Journ. Univers. des Sciences Med. tom. xi.

two attacks of tetanus, which seemed to be attributable to the medicine. At the end of the two months, the palsy was wholly removed.\*

A boy, in the thirteenth year of his age, became affected with a slight degree of numbness in the lower limbs, without any evident cause, which was followed by a painful swelling of the parts; which, however, disappeared in twenty-four hours. The powers of sense and motion in these parts gradually declined, until the patient was hardly able to walk, even when supported by both his arms. The *nux vomica* was prescribed in powder, in doses gradually increased from two to twelve grains. On the third day the limbs became affected with spasms, and the power of motion was in some degree restored; and on the tenth day the cure was complete. †

Since the first publication of this treatise,

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\* Related by M. Lescure, Journ. Univers. des Scienc. Med. tom. xiii.

† Related by M. Finot, Journ. Univers. des Scienc. Med. tom. xi.

I have tried the *nux vomica* in palsy, both in large and in long-continued small doses. In some instances it seemed to have been useful, in others it produced very little effect of any kind. In one case the convulsive motions, above mentioned, were in a very great degree excited, and the patient appeared to have been debilitated by them. On the whole, this medicine has not answered the expectations I had been led to entertain of its efficacy in the cure or relief of palsy. It is right, however, for me to mention, that I did not give the *nux vomica* in the form recommended by Mr. Fouquier.

The *arnica montana*, or leopard's bane, is highly spoken of by some foreign physicians in the cure of palsy. It is given in the dose of from five to ten grains in powder, or an ounce and a half in infusion. Of the advantages derived from the use of this medicine, in paralytic and other affections depending upon an interruption or diminution of nervous energy, we have several proofs; and it is observed, in these cases, that the recovery is generally pre-



ceded by great uneasiness, or acute pain in the parts affected.\*

The virtues of arnica in palsy have been extolled by Junkerus, Eschenbach, Colin, Plenck, and others. They gave it generally in infusion of a drachm to half an ounce of the flowers in a pint of boiling water. This preparation, according to its dose, proved emetic, sudorific, or diuretic. It produced in paralytic parts sometimes a sense of formication, sometimes of lancinating or burning pains. †

The root of horse-radish, and the seeds of mustard, have been very commonly prescribed in hemiplegia ; and I have, in some instances, seen them useful. They are generally ordered in the form of decoction or infusion ; but some think that they may be most advantageously taken in substance, in large doses. Many other vegetable stimulants have been recommended ; but I do not find any accounts of their use worth recording.

One of the most powerful stimulants

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\* Woodville, Med. Bot. vol. i. p. 11.

† Murray.

which have been employed in these cases is cantharides ; which may be taken in tincture, or in substance, in small doses, with safety, and, I believe, with advantage. We are informed that cantharides in substance, in the dose of one grain, conjoined with a scruple of volatile salt, and gradually increased to two grains of the former and forty grains of the latter, every three or four hours, and also cantharides and volatile salts in smaller doses, with guaiacum, have, in some cases of hemiplegia, produced very beneficial effects.\* I think I have seen cantharides useful in several cases of palsy ; but it is a medicine which should be administered with great caution, as in some constitutions it produces sudden and violent effects on the urinary organs. It should therefore be given in small doses at first, and with mucilaginous diluents.

These are the principal stimulants which have been prescribed in this species of palsy ; but a great variety of others have been re-

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\* Medical Comment. vol. xiii. p. 96. — Mem. Med. Soc. vol. i.

commended, particularly æther, camphor, lavender, valerian, castor, and other medicines called nervine ; but I cannot, from experience, speak of their use, nor do I find in authors any accounts which appear to me to be in favour of the employment of them. The ancients were in the habit of giving some of the above-mentioned medicines, and also asafoetida, cardamoms, onions, sagapenum, and sago ; and Pliny informs us, that persons who were in the daily habit of eating the fruit of the caper were not liable to palsy.

Some physicians are of opinion that anodyne medicines, especially opium, are better suited to the cure of hemiplegia than stimulants ; that the former relieve, whilst the latter irritate the system, and increase the disease. We are told that opium may be given with safety in all cases of palsy, and that certain appearances which may be considered as against its employment are fallacious.\*

In cases of hemiplegia accompanied with

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\* Heberden, Falconer, Kirkland.



convulsions or restlessness, I believe opium may be safely and usefully employed.

In the treatment of *paraplegia* particular attention ought to be paid to its cause. When the disease arises from a morbid affection of the spine and the parts immediately connected with it, the excitement of a large discharge of matter from underneath the adipose membrane on each side of the diseased part, has, in many instances, proved successful. Such a discharge, made and continued from the distempered part, checks the further progress of the caries, and gives nature an opportunity of exerting her own powers. It is a matter of very little importance towards the cure, by what means the discharge is procured, provided it be large, that it come from a sufficient depth, and that it be continued for a sufficient length of time.\* Mr. Pott tried the different means of setons, issues by incision, and issues by caustic, and found the last, in general, preferable; being least painful, most cleanly, most manageable, and capable

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\* Pott, p. 33.

of being longest continued. The caustics should be applied on each side of the curvature, in such a manner as to leave the portion of skin covering the spinal processes of the affected bones entire and unhurt, and so large, that the sores upon the separation of the eschars, may easily hold each three or four peas in cases of the smallest curvature ; but, in large curves, at least as many more. These issues should not only be kept open, but the discharge from them should be maintained by means of orange peas, cantharides in fine powder, *æруго æрис*, or any such application as may best serve the intended purpose, which should be that of a large, and a long-continued drain.

Mr. Pott, with that candour which marks a superior mind, acknowledges that this practice was suggested to him by an observation of Dr. Cameron, of Worcester ; who, having noted a passage in Hippocrates, in which he speaks of a paralysis of the lower limbs cured by an abscess in the back, had endeavoured, in a case of paralysis from diseased spine, to imitate this act of nature, by exciting a purulent discharge

near the part affected, with a very beneficial effect.

The success of the above-mentioned treatment of this disease has been confirmed by so many trials, that it has become the common and established practice. Mr. Copeland, however, remarks, that the confidence of practitioners in the use of caustic issues has gradually been shaken by repeated disappointments. M. Camper, many years ago, published his doubts of the propriety of this practice; and, recently, Dr. Armstrong and Mr. Baynton have more strongly expressed their disapprobation of these issues.\*

Dr. Harrison likewise differs in opinion from Mr. Pott, in several particulars respecting the treatment of paraplegia. In attempting the cure of this disease, Dr. Harrison's great object is to restore the back to its natural figure. "Mr. Pott, believing, as he did, that the mischief always began in the bodies of the vertebræ, confined his efforts to the prevention of ulcer-

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\* Copeland, p. 29.



ation, to cure it when present, and to join the bones permanently together in the curved form by an immovable union. The practice of Mr. Pott arose by an obvious deduction from his own premises. His object was to excite inflammatory action by caustic issues, and thereby induce ankylosis, or an union among the morbid bones. "That such treatment," says Dr. Harrison, "is useful at an advanced period, after caries is actually formed, may be agreeable to sound practice, though it has never obtained the universal approbation of medical men. At an early period, while the disorder is confined to ligament alone, the practice of Mr. Pott is highly objectionable, because it prevents the application of other modes better calculated to restore the sufferer to his natural figure and former health." — Dr. Harrison does not mean to deny, nor wish to insinuate, that patients have not got well on this plan. "Caustics," he observes, "by stimulating, encourage the muscles and ligaments to act more energetically, by which they sooner regain their lost tone and vigour. The curative process is further expedited by the rest to

which invalids must, to a certain degree, submit while smarting under the pain of caustics. In many cases, Mr. Pott found it necessary to confine his patients to bed, or to a horizontal situation during the greatest part of the cure. In all these recoveries, the subjects of them remain through life in puny health; because the bones continuing displaced, and some of the viscera being necessarily subjected to injurious pressure, the important functions of the spinal cord are imperfectly discharged, owing to the difficulties it meets with from the altered form and direction of the medullary canal."

According to Dr. Harrison's view of the subject, "the obvious indication for the cure of spinal affections consists in restoring the displaced bones to their natural situations, that the spinal cord and its nerves, relieved from injurious pressure and disturbance, may be reinstated in their former abilities. In all the cases hitherto treated agreeably to these principles, the success has been complete. The affected organs to which they run, being no longer under the influence of diseased nerves, gradually re-

cover their healthy state and proper functions.”

Mr. Baynton has proposed a new mode of treatment in this complaint. “It consists in placing the patient horizontally upon a firm and unyielding mattress, where he is to remain constantly recumbent during the whole process. He is not accommodated with a pillow to support the head, nor is he to be moved in the least for the most necessary occasions.” All fears for the health suffering under this mode, we are informed, have been happily removed by the successful issue of several trials. Mr. Baynton gives an account of his practice in twelve spinal cases. “Of these, one died, and eleven recovered and regained the use of their limbs. The process took up from seven to fifteen months, and the projection was reduced in every instance.” Mr. Baynton imputes the want of success where his treatment failed to previous ankylosis of the displaced bones. — For some observations by Dr. Harrison upon this treatment, see the forty-fifth volume of the London Medical and Physical Journal; and for an analysis of Mr. Baynton’s twelve cases,



with remarks by Mr. Earle, see the eleventh volume of the Edinburgh Medical and Surgical Journal.

In cases of paraplegia from diseased spine in scrofulous habits, I am of opinion that considerable advantage has in many cases been derived from a proper attention to air, exercise, diet, friction, sea-bathing, mercury in alterative doses, and certain tonic medicines, especially the bark.

In the paraplegia depending upon a morbid state of the brain, the general plan recommended in hemiplegia may be adopted. Dr. Baillie does not know, he says, any very successful method of treating this disease. That which he has employed with the greatest advantage, consists in taking away blood by cupping from the nape of the neck; in the application of leeches to the temples; in applying a blister to the nape of the neck; and in inserting a seton there. The internal remedies which he has used with most advantage are calomel, or the *pilula hydrargyri*, combined with squills, together with purgative medicines. A grain of calomel, or five grains of the *pilula hydrargyri* with

one grain of dried squills, have been directed to be taken every night for many weeks. The purgative medicines have consisted chiefly of neutral salts, and sometimes of pills composed of the extractum colocynthis compositum, with an addition of jalap. He has, in a few instances, found considerable advantage from the lower limbs being rubbed with the hand for an hour twice a-day. In one case he found that a good deal of benefit was derived from electric sparks drawn from the lower limbs. From tepid bathing, both in fresh and sea water, he believes that considerable advantage has been derived in some cases of paraplegia; but he has not, from his own experience, found either of them useful. \*

In attempting the cure of *partial palsies*, our practice must be regulated by a careful consideration of the seat and particular symptoms of the disease, as well as of its cause. I shall first treat of the paralytic affections of the organs of sense; among which, none are more common, or more

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\* Medical Transactions, vol. vi. p. 24—26.

difficult of cure, than nervous blindness and deafness; the former called amaurosis, or gutta serena; the latter, dysecoea, or cophosis.

Amaurosis consists in an immoveable state of the iris, attended with blindness in a greater or less degree, immediately depending upon a defect or abolition of sensation in the retina. In these cases the pupil of the eye is generally more or less dilated; sometimes, however, it is preternaturally contracted. In many cases of this blindness, a contraction of the pupil has been observed to be the only change that takes place in the appearance of the eye. In cases of the latter description the obstruction in the sight is usually preceded by severe pains.\* Amaurosis often comes on very gradually, and before blindness actually takes place, the sight seems obscured by the appearance of substances of various colours and shapes floating in the air, or by a mist or cloud covering the object looked at. In amaurosis, generally, both the eyes

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\* Ware, Observations relative to the Eye, vol. ii. p. 434.



are affected, but sometimes only one. Mr. Ware mentions the case of a lady, sixty-three years of age, who, after having lost the sight of the left eye for twenty years, was suddenly affected with an appearance like black lace hanging before the right eye and confusing every object at which she looked. Mr. Blagden, of Petworth, in the fourth volume of *Medical Facts and Observations*, relates the case of a gentleman attacked with this disease, in whom the pupils of both eyes were contracted to as great a degree as the pupil of a sound eye is by a sudden and strong light.

The remote causes of amaurosis are various. It may be produced by pressure on the optic nerves; by tumours, &c. in the brain; by a diseased state of these nerves themselves; by injuries done to the head; by exposure to the rays of the sun; or by a stroke of lightning. It is frequently the consequence of severe inflammation of the eye; or symptomatic of apoplexy, epilepsy, scrofula, or lues venerea. Sometimes no adequate cause can be assigned.

In the treatment of amaurosis, the remedies on which the greatest dependence has

been placed are emetics, cathartics, blisters, issues and setons, stimulating collyria, electricity, errhines, mercury, tonics, and in some cases bleeding. When this palsy depends on any other disease, its cure must be attempted by an endeavour to remove that disease.

Ætius and other ancient Greek physicians recommend bleeding, especially topical bleeding, with a view to remove this affection; and Mr. Ware thinks that, in some cases, where there is much pain in the head, topical blood-letting may prove useful. He mentions instances, however, of amaurosis from other causes, in which an evacuation of blood had been tried without any advantage.

For the cure of amaurosis, Professor Richter, of Gottingen, employed emetics and cathartics, and, as he informs us, with very great success, even in cases of long standing. Tartarised antimony was given in very large doses as an emetic; and his favourite cathartic was soluble tartar. "I have lately restored the sight," he says, "to several patients who laboured under a gutta serena. In all these cases, the cause

of the gutta serena seemed to be seated in the abdominal viscera; for I cured them all by means of medicines, which dissolve obstructions in the viscera, and evacuate.\* The tartarised antimony was given in doses of eight and ten grains, but without occasioning any very violent effects. Speaking of a particular patient, he says, “ten grains of tartar emetic made him vomit four times; and again, eight grains of tartar emetic occasioned bilious vomiting three times, and four stools.” † Professor Richter seems to place great dependence on certain pills, containing a small proportion of tartarised antimony. ‡ Of these pills he ordered from twenty-four to thirty-two, three times a-day. With these pills, he

\* Richter, Med. and Surg. Observ. translated by Spence, p. 254.

† Richter, p. 257. and 258.

‡ R Gumm. ammoniaci.

Assæ foetidæ.

Saponis venetæ.

Rad. valerianæ.

Summit. arnicæ, ana ʒij.

Tartari emetici, gr. xvij. ft. pil. pond. gran. ij.



affirms, that he had restored the sight to patients, in whom the first beginning of amendment did not appear, till after using them for six weeks; and the complete restoration of sight was only accomplished by the continued use of these pills for four months. \* Mr. Ware has described a case of amaurosis, in which the repeated employment of emetics was attended with the happiest effects.

Blisters, issues, and setons are very generally, and I believe, usefully, employed in this affection. When amaurosis proceeds from a paralytic affection of the retina, blisters, we are informed, applied to the fore-part of the head, so as to cover the nerves which issue through the supra orbital foramina, and spread themselves on the forehead, are highly serviceable. † Stimulating collyria have been often tried in these cases; but I find no accounts of their efficacy, that would lead me to expect much advantage from the employment of

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\* Richter, p. 259.

† Percival, *Essays Medical and Experimental*, 209, 210.

them. The remedy on which I would most rely, in attempting the cure of this disease, is electricity. Mr. Ware places great confidence in electricity for the alleviation or removal of this affection, and particularly describes four cases under his care, in which a cure was perfected by it; and he thinks that in many instances, when it has not been successful, the failure might rather be attributed to an injudicious use of it, than to its want of efficacy.\* In the application of electricity to so delicate an organ as the eye, its mildest form is to be preferred, namely, that by stream, by means of a pointed conductor; and the electric aura should not be applied for a longer time than about ten minutes, or a quarter of an hour. Shocks, and even sparks, too powerfully stimulate, and may do injury.

Mr. Partington recommends a cautious application of electricity in nervous blindness. He has favoured me with an account of a case, in which he employed that

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\* Ware on the Eye, p. 425.

power in amaurosis with the best effects. In this instance, he administered the electric fluid, by means of a wooden point, to the eyes themselves, and by an electric brush to the eye-lids.

The success of this practice, which, at different periods, was employed for two months, was very great; the pupils of the eye, to use the patient's own expression, being made to dilate and contract as much as they ought to do.

In the third volume of the American Journal of Science, a case is mentioned of a paralytic affection of the eyes, which was cured by a stroke of lightning during a violent thunder storm, by which the patient was thrown to the ground. The particular nature and symptoms of this palsy are not described.

In the cure of amaurosis, errhines have been recommended. In several cases, considerable relief has been obtained by the use of a snuff, compounded of ten grains of turbith mineral, well mixed with about a drachm of the pulvis sternutatorius of the London Pharmacopœia, or of glycyrrhiza, or saccharum communis. A small



pinch of this snuff, taken up the nose, is found to stimulate it very considerably ; sometimes exciting sneezing, but, in general, producing a very large discharge of mucus. \*

Errhines sometimes produce a bleeding from the nose, which has been thought useful in these cases. Mr. Ware mentions instances of this effect attended with advantage ; and Mr. Blagden, of Petworth, has published, in the fourth volume of *Medical Facts and Observations*, a case of amaurosis cured by a snuff, consisting of five grains of *hydrargyrus vitriolatus*, and thirty-five of the *pulvis asari compositus*. This snuff occasioned the patient's nose to bleed freely ; and Mr. Blagden observed that the use of the remedy was in proportion to this effect. With respect to the more acrid errhines, such as the root of hellebore, euphorbium, &c., great caution is recommended, as they may ulcerate the membranous lining of the nose, and occa-

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\* Ware, 435, 436.

sion incessant sneezing, threatening convulsions. \*

In some instances mercury, given in small alterative doses, has been found highly beneficial in the treatment of this disease. Mr. Ware strongly recommends, in preference to all external applications whatever, the internal use of the oxymuriate of mercury, of which he orders a quarter of a grain for a dose, dissolved in brandy, and taken in sago, or water-gruel. †

In addition to these remedies, in the treatment of amaurosis, some practitioners recommend a great variety of those which are called nervine and tonic.

Mr. Travers thinks that the treatment of amaurosis should be almost exclusively constitutional. He places no confidence in external applications, such as stimulant vapours, drops, and ointments ; spirituous and aromatic embrocations, sternutatories, &c. He makes an exception, however, in favour of cupping, issues, or setons, in cer-

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\* Van Swieten, § 1068.

† Ware, p. 435.

tain cases, and of blisters in almost all. He never witnessed any advantage in this disorder from the employment of electricity or galvanism; he has not known any real benefit from what are called antispasmodic and anti-nervous medicines; nor from the exhibition of emetics, though, from respect to authority, he has fairly tried them in many instances.

In most cases of amaurosis, Mr. Travers depends on the regulation of the visceral functions, and the employment of such restoratives as the system requires, and can bear. The blue pill, with colocynth, rhubarb, and aloes, and the combination of soda with rhubarb and calumba or gentian, are best adapted, he thinks, to the former purpose. The exhibition of general tonics, he says, is often indicated; and he has seen much benefit from the mineral acids, bark, steel, and arsenic when admissible, after a due regulation of the digestive functions. In recent and sudden amaurosis, Mr. Travers recommends a mild administration of mercury, but salivation, he thinks, is always hurtful; and he is of opinion, that "all cases of direct debility, and proper paralysis



of the retina, are aggravated by the loss of blood." \*

In the treatment of this complaint, Dr. Vetch is a warm advocate for the practice of blood-letting. He observes, that in cases of amaurosis, where the usual symptoms of inflammation are least of all observable, the necessity of relieving the vessels of the part will often be the most urgent; and, although a few ounces of blood taken from the temples may subdue any outward appearance of congestion, or arterial action, which has taken place in consequence of pressure, the evacuation must be carried to the full extent of producing syncope, in order to make such an impression on the congestive state of the deep-seated vessels as will enable them to recover their power of contraction. The effects of this depletion are to be assisted by the usual means of lessening the quantity of blood sent to the part. Leeches applied to the septum nasi are found to be more effectual than any other mode of employing them.

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\* Travers's Synop. p. 300.

In the treatment of amaurosis, Dr. Vetch also mentions the employment of purgatives; antimonial emetics; pediluvium; seclusion from light; cold applications to the eyes; blisters and rubefacients to the neck and behind the ears; sinapisms to the feet and legs; and the reproduction of any habitual discharge, or cutaneous disorder: but he has not expressly stated his opinion concerning the particular uses of these various means, or the advantages to be expected from them. \*

A paralytic affection of the auditory nerves does not often, I believe, occur. Deafness more frequently depends on other causes, such as an obstruction of the Eustachian tube, wounds, ulcers, or whatever mechanically impedes the functions of the ear. For the cure of deafness, a great variety of topical remedies have been recommended, such as oils, spirits, preparations of lavender, musk, and other nervines; but I doubt much of the efficacy and even safety of these applications, to

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\* Vetch's Treatise on Disorders of the Eyes.

an organ of so much delicacy as the ear. When we have reason to believe that deafness depends upon palsy, blisters behind the ears, or issues, or setons to the neck, together with electricity or galvanism, may be tried, perhaps, with advantage. Dr. Priestley, in his *History of Electricity*, mentions a case, in which a woman was cured by it, who had laboured under a deafness for seventeen years. \*

As electricity and galvanism are chiefly recommended in those cases of deafness which depend upon palsy, it is of consequence to distinguish such cases from deafness depending on other causes. In order to ascertain whether or not deafness depends upon a paralytic state of the auditory nerves, we are directed to place a watch between the teeth, so as to rest upon them. If the beating of the watch, thus placed, cannot be heard, we may conclude the disease to be palsy. Deafness often depends upon an obstruction of the Eustachian tube, in which case relief may be obtained by an operation. For a particular

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\* Priestley, p. 415.



account of the method of judging whether in deafness this tube be closed or open, see Sir Astley Cooper's excellent paper in the Philosophical Transactions, for 1801.

Paralytic affections of the olfactory and gustatory nerves, called *anosmia* and *ageusia*, do not, I believe, often occur. With respect to the treatment of these diseases, I have nothing material to communicate, either from authors, or from my own experience. A want of the power of smelling, or of tasting, more frequently depends upon organic disease than on palsy, and it is only with paralytic affections that we are at present engaged. When these complaints are symptomatic of fevers, &c., it is evident that we must endeavour to remove them by means suited to the removal of the disease, of which they are symptomatic. In *anosmia* mild errhines, and in *ageusia* the chewing of the roots of pellitory of Spain, horse-radish, or other stimulating substances have been recommended.

After this account of the partial palsies which consist in a *loss of sensation*, I proceed to the consideration of those which consist in a *loss of motion*. Among these,

the first that occurs in the order of Dr. Young, is the want of motion from the effects of lead, or other noxious mineral substances, denominated by Dr. Cullen, *paralysis venenata*. This palsy is generally, but not always, accompanied with colic.

Although lead may produce its deleterious effects in any part, it chiefly attacks the hands and wrists, greatly impairing their motion, without much diminishing their sensation.

For the alleviation or cure of this complaint, the history of which has been already given, a great variety of remedies, both external and internal, have been recommended, the principal of the former of which, are, friction, warm-bathing, electricity, liniments, and blisters; and of the latter, almost all the stimulants above mentioned in the treatment of hemiplegia, together with bark, bitters, and chalybeates. When the disease is accompanied with colic, the cure is to be attempted by purgatives, particularly castor-oil; by fomentations and liniments, and the warm bath; by opium and other anodynes; by the balsams of Copaiva and Peru; and by a

variety of tonic medicines, for a particular account of which, I refer to treatises on Colica Pictonum, by Sir George Baker, Dr. Clutterbuck, and others.

For the cure of paralysis from lead and other noxious mineral substances, the Bath waters are celebrated, and also those of Bareges and Aix-la-Chapelle. Very beneficial effects are said to have followed the external application, and internal use, of sulphureous waters, in the cases of a number of painters, who, having been employed in the arsenals of the port of Ferrol, became affected with the colica pictonum, attended with paralytic affections of the hands and arms. M. Bosquet, physician-in-chief to the Spanish army, had in so many instances observed the good effects of drinking the sulphureous waters of a spring in a village near Ferrol, and of bathing in them, that he almost entirely trusted to these waters for the cure of that species of colic, and the palsy which accompanied it. \*

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\*. *Traité de la Colique Metallique*, par M. Merat, p. 201.



M. Segault de Lafond relates the cases of twenty-three paralytic persons cured by electricity, of which several were cases of palsy from lead. Dr. Percival had an opportunity of observing the good effects of electricity in general palsy arising from this cause; but the relief afforded was not permanent. \* Galvanism has also been tried, especially by foreign physicians; but without advantage. In the hospital La Charité at Paris, the galvanic power was applied in the case of a painter, who had become paralytic; but the complaint was rather aggravated than relieved by it.

For the cure of palsy of the hands and arms, sometimes with, and sometimes without colic, Dr. Clutterbuck recommends mercury, and relates several cases in which its good effects were evident. He gives this medicine in the form of calomel, and of ointment to be rubbed on the parts affected; and he directs that this plan should be continued till the mouth becomes

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\* Perciv. Med. Essays.

sore. Dr. Clutterbuck's observations of the good effects of mercury in this disease lead him strongly to recommend it.

In palsy of the hands from lead, we are told that much advantage has been in some cases derived from a flat piece of wood somewhat like a battledore, fastened to the fore-arm, and extended to the ends of the fingers. The muscles are supposed to be thus kept in a favourable position.\*

The paralytic affections arising from arsenic, and other mineral poisons, are to be treated in the same manner as those which arise from lead.

The palsy produced by *bella donna*, and other vegetable narcotics, is, I believe, generally of short duration, either spontaneously ceasing, or disappearing soon after the exhibition of emetics and purgatives.

Among the partial palsies, those of the muscles of speech, and deglutition, and of the muscles of the bladder, are the most frequent; for though we read of paralysis of the heart †, of the muscles of respiration, of

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\* Pemberton on Diseases of the Abdominal Viscera.

† Boerh. Aph. § 1062.

the stomach and the intestines, they very rarely occur. Palsy of the muscles of speech has been called *aphonia*. These muscles of speech are almost always more or less affected in hemiplegia ; but instances sometimes occur of paralytic affections of these parts without any other palsy. We have a case of this kind related in the Edinburgh Medical and Surgical Essays, in which free depletion by bleeding and purging cured the disease. A person of a costive habit of body was suddenly attacked with paralysis of the tongue without any other complaint ; when twenty ounces of blood were immediately taken from the arm, and a bolus, consisting of a scruple of the electuary of scammony and six grains of calomel, was administered, and in four hours repeated. An embrocation of equal parts of turpentine and camphorated spirit, was used to the external parts of the throat and neck, every two hours. On the day following, the patient had five or six foetid, dark-coloured evacuations from the bowels ; after which the power of speech, and the perfect motion of the tongue were restored.\* In this pa-

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\* Edin. Med. and Surg. Journal.



ralysis, Forestus advises us to open a vein under the tongue, to apply cupping-glasses under the chin, and acrid liniments and sinapisms to the back of the head and neck; to employ cathartics, and to use stimulants internally and in the form of gargles; and he adduces instances of recovery from the disease by these means. In the case described in page 11. the power of speech was almost entirely restored by galvanism and stimulating gargles, together with mercurials in alterative doses, and purgatives occasionally administered.

Palsy of the muscles of deglutition, denominated *dysphagia*, in some degree very frequently accompanies hemiplegia, and recedes as other symptoms recede; but if these muscles be completely paralysed, the power of swallowing becomes wholly abolished, and food and medicine can only be introduced into the stomach by artificial means. Mr. Hunter, in speaking of *dysphagia* from paralysis, observes, that he cannot determine whether or not the muscular coat of the *oesophagus* is ever affected

by it; but he expresses his conviction that the muscles of the pharynx have sometimes become paralytic, and that, in consequence, the patient has died of hunger. He describes a case of this paralysis, in which the subject of it was wholly incapable of swallowing; and in which cupping, blistering the throat, and the application of electricity, had been prescribed, without any benefit. In this instance Mr. Hunter recommended that a hollow, flexible tube, should be passed down into the stomach, by means of which food and medicine might be received. Valerian, in large doses, was thus administered, and laudanum was given both by the mouth, and in the form of clyster. As the laudanum affected the head without procuring sleep, the employment of it was relinquished; but the valerian was continued for about a month, when the patient had evidently recovered a degree of sensation in the throat. Two scruples of flour of mustard, with a drachm of the tincture of valerian, were afterwards given twice a-day; and under this treatment, in a few days, the power of swallowing gradually

returned, and the tube was no longer necessary. For a particular account of the nature and composition of this tube, I refer to the first volume of the Transactions of the Society for promoting medical and surgical knowledge.

Although the diseases called *aphonia* and *dysphagia* have been particularly described by Sauvages and Cullen, I find nothing of much importance respecting the treatment of them in those authors. In the latter complaint, Sauvages recommends the remedies employed in the more general palsies, and the mastication of aromatics, and the radix pyrethri. In both these affections, I have seen good effects from blisters applied to the external fauces, and from stimulating gargles. Perhaps electricity might be found useful under such circumstances.

One of the organs most frequently attacked by paralysis, is the bladder; in which cases, Forestus and others recommend stimulating embrocations to the parts in the neighbourhood of the bladder, and strong cathartics. Forestus thinks that castor is useful in this, and all other



palsies. \* In palsy of the bladder, I have, in several instances, seen very good effects from blisters applied to the os sacrum, and tincture of cantharides taken in small doses.

Palsies of particular muscles sometimes depend upon a diseased state of some parts of the brain, or spine; sometimes upon morbid affections of the nerves themselves. In the former cases, we are advised by Galen to make our applications as nearly as possible to the origin of nerves, rather than to the nerves themselves, particularly in palsies of muscles, the nerves of which are derived from the spinal marrow.

In those cases in which the loss of motion of particular parts is accompanied with pain, Mr. Bell advises the application of leeches along the course of the nerves of the part affected, a free administration of cathartics, friction with laudanum, and proper supporting bandages. This plan, with

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\* Neque prætermittatur castoreum; habet enim proprietatem mirabilem ut omni paralysi conveniat.

*Forestus, lib. x. ob. 92.*

the addition of opium and colchicum, internally taken in considerable doses, proved effectual in relieving the distressing case above mentioned under the care of Mr. Bell.

Mr. Pearson has, at considerable length, described some remarkable symptoms, connected with a painful affection of the left thumb; amongst which were a very great diminution of the power of voluntary motion in the brachial muscles, and pain and debility in the lower extremities, with nearly an inability of locomotion. I cannot, consistently with my plan, give an account of the particulars of this interesting case; but must refer to the eighth volume of the Medico Chirurgical Transactions, where they are very minutely detailed. I shall, however, briefly describe the mode of treatment which Mr. Pearson employed with the happiest effects. After having tried, without the smallest advantage, a great variety of means, he was at length induced to attempt the cure of the complaint by inflicting a disease which should extend over a large portion of the surface of the body, and which, after ex-

citing a series of actions in the skin, should finally cause an extensive eruption, attended with the usual concomitants of certain exanthemata. For this purpose, he directed a stimulating liniment \*, to be rubbed during ten minutes, twice in the day, over the whole circumference of the upper part of the arm, beginning immediately below the joint of the shoulder, and including a space bounded by the inferior extremity of the deltoid muscle. No local effects upon the skin being perceptible at the end of three days, he added half a drachm more of the sulphuric acid to the composition, and desired that it might be applied three times in the day. In somewhat less than a fortnight, pain and redness appeared in the upper arm; and on using the liniment during the incipient state of inflammation, in the space of little more than an hour, the whole arm, from the shoulder to the hand, was red, heated, tumid, and very painful. These symptoms became gradually more

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\* R. *Ol. Olivæ* ℥ii p.  
Terebinth. ℥i p.  
Acid. Sulph. ℥j.



intense, and were diffused more extensively, increasing progressively during five days. At this time a number of small vesicles, containing a pellucid fluid, appeared on various parts of the arm; the face became swollen, as in the acute erysipelas, and vesicles were distributed on different parts of its surface. In a few days the heat, redness, tumefaction, and uneasiness of the arm were considerably diminished, and the patient recovered visibly every day. About the fifth day after the appearance of the cutaneous disease, the thumb became agitated by a spontaneous motion, unattended with pain. The thumb and fore-finger of the left hand having now lost their morbid sensibility, became gradually capable of regular voluntary motion; the disease was removed, and the affected arm and hand gradually regained the faculty of performing their customary actions. At the expiration of little more than two months from the application of the rubefacient, all appearance of the disease had vanished. \*

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\* Med. Chirurg. Trans. vol. viii. p. 252.

A disease has been lately described by Mr. Parkinson, under the title *paralysis agitans* or shaking palsy, which appears to me to be highly deserving of our attention ; I shall, therefore, here give a short account of it, though nosologists have not classed it among the palsies.

This disease begins with some degree of weakness, and a slight trembling in some particular part, sometimes in the head, but most commonly in one hand and arm. These symptoms gradually increase, and at length some other part becomes similarly affected, generally the other hand and arm. Some time after the appearance of these symptoms, one of the legs is observed slightly to tremble, and is found to suffer fatigue sooner than the leg of the other side ; but in a few months this leg also becomes agitated in a similar manner, and experiences a similar loss of power. Under these circumstances the limbs, in walking, cannot be raised to that height, nor with that promptitude which the will directs, and the body is involuntarily thrown forwards, so that the patient is forced to step on his toes and the fore-part of his feet,

and in walking to take short and quick steps, and at length to increase his pace to that of running, to prevent his falling to the ground.\* In this stage of the disease, the sleep becomes disturbed by tremulous motions; the limbs are no longer obedient to the will, so that the ordinary offices of life cannot be performed; the bowels become exceedingly torpid, and demand stimulating medicines of great power; the trunk is almost permanently bowed; the weakness greatly increases, and the tremulous agitation becomes very violent; the speech is much impeded; the power of retaining food in the mouth, and of swallowing it, is almost abolished; the saliva trickles from the mouth; the urine and fæces pass away involuntarily; and constant sleepiness with slight delirium supervene, which are soon followed by the death of the patient.

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\* The case of Major H——, above described, as an anomalous paraplegia, was so strongly marked by these symptoms, that it might have been more properly placed under the head Paralysis agitans.



Mr. Parkinson conjectures that a diseased state of the medulla spinalis, in that part which is contained in the canal formed by the superior cervical vertebræ, and extending as the disease proceeds to the medulla oblongata, is the proximate cause of this disease.

For the cure of paralysis agitans, Mr. Parkinson recommends that blood should be taken from the upper part of the neck, after which vesicatories should be applied to the same part, and a purulent discharge obtained by the use of the sabine liniment. If a sufficient discharge cannot be obtained by blisters, he directs that large issues should be made on each side of the upper part of the vertebral column, and kept open. On these means, with a proper attention to the state of the bowels, Mr. Parkinson chiefly relies for the alleviation and cure of this disorder.

For a variety of interesting particulars respecting paralysis agitans, I refer to Mr. Parkinson's Treatise.

## APPENDIX.

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*Abstract of Dr. Gordon's Report from the Minutes of the  
Army Medical Board.*

DR. GORDON does not find that any particular make or conformation of body was observable in those soldiers who were affected with apoplexy and palsy. The chief exciting causes of these disorders were intoxication, exposure to the rays of the sun, drinking cold water, and bathing in cold water, when the body was heated. Dr. Gordon remarks, that apoplexy often followed epilepsy, long-continued fevers, and visceral disease, especially dysentery; and that serous apoplexy sometimes came on after a species of marasmus, denominated *Cachexia Africana*; sometimes after an improper use of mercury; and frequently after blows, and falls from horseback.

The apoplectic seizure, in this climate, chiefly occurs between the ages of thirty and fifty; but in warm climates it takes place without much reference to any particular age, as it arises

chiefly from exposure to the sun, and the abuse of spirituous liquors. The appearances found after death much resemble those which I have at large described.

Dr. Gordon observes, that in the treatment of this disease in the army, the remedies almost wholly relied upon were bleeding, both general and topical, including arteriotomy; the application of blisters, and the administration of cathartic medicines.



*Return of Cases of Paralysis and Apoplexy, treated in the Army during  
the Period of Six Months.*

PERIODS.	Strength.	SERVICES.	Treated.		Died.	
			Apoplexia.	Paralysis.	Apoplexia.	Paralysis.
From 21st Decemb. 1819, To 20th June 1820.	5999 11865 6190 3958	Cavalry Infantry Veteran battalions Fort Pitt Hosp. &c. } Eng <sup>l</sup> and.	3 1 3 1	4 5 4 17	1 0 2 0	0 0 0 0
From Dec. to June 1819.	7186 1758	Windw. and Leew. Islands Mauritius	3 2	1 2	0 0	0 1
Mar. to Sept. 1819. Apr. to Oct. 1819. Ditto to ditto, ditto.	12800 } 12800	Bombay Bengal Madras	8 3 4	12 5 1	8 2 3	1 1 0

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CONTENTS  
OF  
THE SECOND VOLUME, PART II.

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*OF EPILEPSY.*

	Page
CHAP. I.	
Definition and History - - -	1
CHAP. II.	
Dissections - - - - -	26
CHAP. III.	
Distinctions and Causes - - -	42
CHAP. IV.	
Diagnosis and Prognosis - - -	92
CHAP. V.	
Treatment of Epilepsy - - -	96





ON  
NERVOUS DISEASES.

---

OF EPILEPSY.

CHAP. I.

*Definition and History.*

IN the former part of my treatise on nervous diseases, I have given an account of the opinions and observations of a great number of writers, both ancient and modern, respecting the history, nature, causes, and method of cure of the various species of apoplexy and palsy; two very important diseases, as they frequently occur, and are highly dangerous. I now propose, in like manner, to treat of epilepsy, a nervous disorder, in some respects resembling them, and not less important.

Epilepsy is a complaint which is often accompanied with very extraordinary symp-

toms and circumstances, and has therefore, at all times, particularly attracted the attention both of medical men and of the world at large. It has been described by Hippocrates, Galen, Aretæus, and all the ancient Greek physicians with whose works we are acquainted; by Celsus and other Latin authors; and by the most distinguished among the moderns; yet its nature or proximate cause still remains unknown, and the method of its cure difficult and uncertain. Some valuable information, however, may be collected from various sources; of which, together with a few observations of my own, I propose now to give an account.

Hippocrates has devoted a whole book to the consideration of epilepsy; and the disease has been at considerable length described by Galen, Ætius, Alexander Trallianus, and Paulus Ægineta; but I find very little respecting it in the works of these authors which seems important.

Aretæus appears to me to be the only writer on epilepsy among the ancients who is worthy of much attention. He has given a very good description of its symp-



toms, causes, and treatment ; and what he has said on the subject may be read with considerable advantage. We are, however, chiefly indebted to modern systematic writers, and to the various medical journals of this and other countries, for useful facts and practical observations relative to this disease.

Epilepsy has been distinguished by a great variety of names, such as *morbus sacer*, *comitialis*, *Herculeus*, *caducus*, &c. Aretæus says, it may have been called sacred on account of the magnitude of the evil, it being customary to call what is great by that name ; or because it is to be cured rather by divine than by human power, or because persons labouring under it have been thought possessed by demons.\* Hippocrates, although he has described the disease under the title sacred, ridicules the opinion that it has any connexion with supernatural influence. The complaint called sacred, he says, appears to be in no respect more

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\* Aret. de Caus. et Sign. Morb. Acut. lib. i. c. 4.

divine than others, having, like them, its own particular nature and origin. He maintains that he can point out many disorders not less wonderful in their symptoms, to which no one ever thought of applying the term sacred. Besides, he remarks, if we attribute the disease to the gods, we ought to seek its cure in the temples.\* Some of the ancients were of opinion that epilepsy was denominated the Herculean disease, because Hercules was subject to it; but Galen says it was so called on account of its power or magnitude. Epilepsy was denominated *morbis comitialis*, either because it frequently occurred in the crowded assemblies of the Romans called *comitia*, in which the passions of the people were often much excited, by which it might be occasioned, or because it was customary to dissolve the *comitia*, if, during the sitting, any person should be affected by it.† The application of the term *caducus*, or fall-

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\* Hip. de Morb. Sacr. p. 1.

† Manutius de legibus Romanorum, Scribonius Largus, Quintus Serenus Sammonicus.

ing-sickness, is too evident to need illustration.

Epilepsy has been variously defined by different authors. I think it may be accurately and shortly described, by saying, that it is a disease consisting of paroxysms of convulsion, returning at uncertain periods, accompanied by an abolition of sense and voluntary motion, and ending in somnolency or complete sleep.

The attacks of epilepsy are sometimes sudden ; sometimes, as in apoplexy, they are preceded by certain premonitory symptoms, such as languor, torpor, pain or giddiness in the head, drowsiness, or disturbed sleep, dimness of sight, and tinnitus aurium. Besides these, many other precursors of epilepsy have been mentioned by authors. Among them, Aretæus enumerates fulness and distention of the veins of the neck, and nausea and vomiting, especially after eating. Immediately before the fit, he says, flashes of light appear to the eyes, of purple, or black, or of various colours mixed together, as in the rainbow ; there is a singing in the ears ; disagreeable odours are perceived ; and persons become



bilious, and apt to be angry without cause. Two or three days before the accession of the fit, he observes, persons sometimes experience perturbation of mind, pain and swimming in the head, and weakness of stomach.\* A celebrated physician remarks, that, in some cases, a few hours before the paroxysm, a slight alienation of mind is observable; that persons are sometimes affected with a sort of vapour of the smell and flavour of musk †; with pain in the bowels; looseness; vomiting; pain in the head; obscurity of sight; impeded or suppressed speech; difficulty of breathing, and coldness of the extremities.

These circumstances and symptoms warn us of the approach of an epileptic fit; but

\* Ην δὲ πλησίον εἶδετο ἡ τοῦ παροξυσμοῦ, κύκλω μαρμαρυγαὶ πρὸ τῆς ὀψιτοῦ πορφυρέων ἢ μελάνων ἢ πάντων ὁμοῦ συμμεμιγμένων, ὡς δοκέειν τὴν ἐν οὐράνῳ τετανύσθαι ἱρίν· ἤχοι ὧτων βαρυοδμῖν· ὀργίλοι πικρόχολοι παραλόγως.

*Aret. de Caus. et Sign. Morb. Acut. lib. i. c. 5.*

† Gustu et odore moschi. *Heberden*.—In a particular instance, mentioned to me by a medical friend, (Mr. Hutchinson,) the approach of epilepsy, which generally came on immediately before the menstrual evacuation, was marked by the appearance of a singular blue colour of the gums.

the most remarkable precursor of the disease is a sensation which persons find great difficulty in describing, which generally passes from the extremities to the head, and is immediately followed by the paroxysm. This sensation has been likened by some to that of a cool and gentle air blowing on the part affected, hence called *aura epileptica*; by others, to that of a stream of cold water running from different parts to the head, or to a sense of the creeping of insects from the extremities upwards, denominated *formicatio*.

This symptom, or as some call it, cause, of epilepsy has been noticed by almost all writers on the disease both ancient and modern.

Galen says, that in the early part of his life he had seen an epileptic boy, about thirteen years of age, who spoke of this affection as a certain something which he could not clearly describe, ascending along the thighs, the loins, the sides, and the neck, up to the head; which was followed by a total loss of memory or recollection. He also mentions a case, in which the sensation was compared to that of a cold

wind ascending to the head.\* Paulus Ægineta likewise describes this *aura frigida* as going from the legs, or from the fingers to the head. He speaks of a woman who, during pregnancy, had epileptic fits, which were preceded by a sense of a cold air ascending from the uterus to the brain. Schenckius has described this sensation as it affected a boy of twelve years of age, who was subject to epilepsy.†

The *aura epileptica*, in some cases, seems to be the consequence of an irritation of a nerve in the part from which it arises. Galen thus explains the phenomenon, which he compares to the effect of the bite of a venomous animal. Modern authors, also, consider this sensation as an evidence of some irritation or direct stimulus, acting on a part, and communicated to the brain.

\* Αὔραν τινὰ ψυχρὰν ἔφασκεν εἶναι.

*Gal. de Locis Aff.* lib. iii. c. 2.

† A little before the accession of the paroxysm percipiebat a pede aliquid, quod tamen nesciebat, ad genu ascendere, mox ad coxam, indeque paulatim serpens, ad caput perstringebat, et subinde statim cadebat, neque per octavam horæ partem, aliquid sentiebat.

*Schenck.* p. 106.



A late eminent writer\* thinks, “that it may arise from an affection of the extremities or other parts of a nerve, acted upon by some irritating matter and following the course of such nerve;” but he remarks, “that he never found it distinctly taking the course of such a nerve, for it generally seems to pass along the integuments.” Several authors mention cases in which the aura epileptica appeared clearly to arise from distinct local disease.† Donat attended a woman subject to epileptic fits, which were preceded by a pain in the breast, and by the sensation of a vapour ascending from that part to the head. The breast, in this case, was inflamed, and became ulcerated, matter was discharged from it, and whilst that continued to flow, the woman remained free from the complaint. A young lady, who was subject to frequent fits of a convulsive nature, which resisted all medicines, was told by a celebrated physician at Oxford, that they were occasioned by the dis-

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\* Cullen.

† Fonetus, Fernelius, Haller, &c.

location of a small bone of the great toe, and that the amputation of the toe would remove the disease. The amputation was performed, and her health was restored.\* Other cases of a similar kind might be quoted from a variety of authors.

Sometimes epilepsy makes its attack without having been preceded by this or any other premonitory symptom, when the patient falls suddenly to the ground in a state of utter insensibility. He neither sees, nor hears, nor is at all conscious of impressions, however powerful they may be.† The most violent stimulants pro-

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\* Dictionnaire Univ. de Med.

† Van Swieten says, in epilepsy, all the external and internal senses are wholly abolished; and this, I believe, is the opinion of the generality of pathologists; but a physician, to whose opinions I pay great respect, informs me, that he doubts very much whether the will be always inactive in epilepsy, and whether the muscles are not to a certain degree obedient to it. The resistance to the exertions, he says, made by the bystanders to confine the limbs, appears to me, in some cases, to be voluntary, and to argue some perception of that resistance, and some desire to overcome it. The state of mind, in these cases, appears to me like that which takes place in dreaming and in delirium.

duce no effect. Voluntary motion is entirely abolished, the muscles being no longer obedient to the will, or rather the will being no longer in action. Involuntary muscular power, however, remains, and is indeed excessive, and sometimes preternaturally violent. \*

A modern writer † is of opinion, that a degree of consciousness sometimes remains through the whole paroxysm. Dr. Good thinks that there are a few rare instances of some degree of consciousness and perception throughout the paroxysm; but he says the exceptions are few, and by no means enough to disturb the general rule.

The powerful contractions of muscles, especially of the face, are often such as to terrify the beholder. The body is sometimes bent forwards, till the chin touches the breast ‡; sometimes it is drawn back-

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\* A young girl, in an epileptic paroxysm, has been seen in a state of convulsive muscular action so powerful that four strong men could scarcely restrain her. *Van Swieten*, 391.

† Dr. Prichard.

‡ Aretæus.



wards with prodigious force. The eyes roll furiously, or are so distorted that the white part of them can only be seen; the lips are dreadfully convulsed, and covered with a frothy saliva; the tongue is thrust violently from the mouth, and is sometimes shockingly lacerated by the spasmodic contraction of the muscles of the jaws, which bring the teeth together suddenly, and with great violence. The face is very pale, or else livid, or almost black. The muscles, expressive of various and as it were contending passions of the mind, are sometimes together thrown into a state of powerful involuntary action; which, with the rolling of the eyes, the foaming at the mouth, and the gnashing of the teeth, give to the countenance a horribly wild, and, as some fancy, supernatural expression, as if the wretched patient were possessed, or, in the language of Scripture, *torn* by some malignant demon. \*

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\* Lucretius has briefly and very strikingly described an epileptic paroxysm in the following lines:

Quinetiam, subita vi morbi coactus

Ante oculos aliquis nostros, ut fulminis ictu,

In a paroxysm of this disease, the vital and natural, as well as the animal functions, are often much deranged. The heart palpitates, the pulse is irregular, the breathing oppressed, and sometimes highly laborious, and even stertorous.

The secretions and excretions are also more or less disturbed: bile in large quantity is, in some cases, ejected from the stomach, and a thick viscid saliva from the mouth. Not unfrequently the semen, fæces, and urine, are involuntarily and forcibly discharged.

These are the principal symptoms and circumstances which attend an epileptic paroxysm, in addition to which, many others might be quoted from various

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Concidit, et spumas agit, ingemit, et tremit artus,  
Desipit, extentat nervos, torquetur, anhelat,  
Inconstanter et in jactando membra fatigat:  
Nimirum, quia vis morbi distracta per artus  
Turbat agens animum, spumanti ut in æquore salso  
Ventorum validis fervere viribus undæ.

——— Ubi jam morbi se flexit causa, reditque  
In latebras ater corrupti corporis humor,  
Tum quasi talipedans primum consurgit, et omneis  
Paulatim redit in sensus, animamque receptat.

*Lucret. lib. iii.*

authors who have described particular cases. Schenck mentions an instance of epilepsy, which was always ushered in by a strange involuntary whirling of the body\* round and round: and an eminent writer speaks of a Jewish woman, who, in the fit, had the lips alternately contracted and elongated, thrust out into a sharp beak, and then drawn back with such celerity as to make the beholders giddy.† In some cases, on the accession of epilepsy, the eyebrows are violently contracted, as when persons are agitated by excessive anger, and the patient utters loud cries or frightful screams. Sometimes the forehead is much convulsed, and also the scalp, so that the hair seems to stand erect. The moveable part of the face, which reaches from the eyes down to the chin, says Van Swieten, and which is composed of a great number of muscles, found by anatomists to differ in different

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\* Vidi quendam epilepticum singulis diebus aliquoties in epilepticos paroxysmos incidere solitum, prius multoties in gyrum veluti verti, ac agitari et tandem in humum collabentem epilepticis convulsionibus mirifice torqueri magna astantium commiseratione.

† Boerhaave, Van Swieten, § 1073.



bodies, and by the changes of which painters and statuaries know how to express the affections of the mind, are surprisingly convulsed.\* In the beginning of the paroxysm the cheeks are red, but in its advance they contract a livid colour, as does also the face; the vessels of the neck are distended, and the voice is like that of a person almost suffocated.† In these cases, respiration being impeded, the blood cannot be freely transmitted through the lungs, and the right ventricle of the heart cannot evacuate itself: hence the venous blood is accumulated near that ventricle‡, and the conspicuous veins become turgid, especially the jugular veins, and those of the forehead, and under the tongue; and

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\* Mobilis autem illa faciei pars, quæ sub oculis ad mentum usque extenditur, numerosis musculis constans, qui in singulis fere cadaveribus diversi reperiuntur ab anatomicis, et cujus partis sola mutatione pictores et statuarii omnes animi affectus exprimere noverunt, miro modo agitari solet. *Van Swieten, Com. § 1073.*

† Ως ἐν πνιγῇ ἀφωνίῃ. *Aret. de Caus. et Sign. Morb. Acut. lib. i. c. 5.*

‡ Unde sanguis venosus accumulatur circa cor dextrum. *Van Swieten.*

hence the livid or almost black colour of the face.\* In some cases, after a violent fit, the face remains tumefied, and affected with ecchymosis. M. Tissot was consulted by a patient in whom this ecchymosis was very strikingly apparent, especially about the forehead and eyes, the rest of the countenance exhibiting here and there small red spots; which, however, after a few hours, disappeared.

The state of the circulation of the blood is very different in different cases of epilepsy. The heart sometimes palpitates with great violence, and the pulse, during the fit, is always quick; indeed it cannot well be otherwise, in such violent exertions of the muscles. In the beginning of the paroxysm the pulse is small, and often irregular; but in the advance it becomes fuller.† This is the account which writers in general give of the state of the pulse in epilepsy. Aretæus says, in the beginning it is vehement, quick, and small; towards the end

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\* Van Swieten.

† Tissot.

full, and slow, and languid ; throughout the whole, disturbed or irregular. \*

The degree of convulsive action in this disease is different in different cases. We are informed that it is sometimes so violent as to break the teeth. The lower jaw is sometimes pulled with such force from the upper, that it is dislocated ; and in the case of a young person to whom this happened, the luxation not being at first reduced, the mischief remained during life, which was for several years. †

In epilepsy, all the muscles may be violently and involuntarily thrown into the various actions of which they are capable in a state of health, and when subject to the will. Those of the breast and abdomen are sometimes most powerfully affected with spasm, so that, emprosthotonos, or opisthotonos, or the general rigidity of tetanos, supervene. Boerhaave remarks, that

\* Σφυγμοὶ σφοδροί, καὶ ταχέες, καὶ σμικροὶ ἐν τῇσι ἀρχῇσι· μεγάλοι δὲ, καὶ βραδέες, καὶ νωθοὶ ἐπὶ τῷ τελειῷ· ἄτακτοι δὲ ἐς τὸ ξύνολον· *Aret. de Caus. et Sign. lib. 1. ch. 5.*

† Van Swieten.



there is no gesture, distortion, or posture which epilepsy has not sometimes represented. It imitates all kinds of motion; running, walking, whirling round, falling prostrate, &c. — What Sydenham has said of hysteria, respecting the difficulty of describing all the symptoms which occur in its different forms, may be truly said of epilepsy.\*

In the paroxysm, the symptoms above mentioned, sometimes sooner, sometimes later, gradually give way.† The convulsions become less violent, the breathing more free, the pulse more full, slow, and

\* Dies me deficeret, si omnia, quæ adfectus hystericos gravant symptomata, enumerare velim; tam diversa atque ad invicem contraria specie variantia, quam nec Proteus lusit unquam, nec coloratus spectatur chamæleon.

Syd. Op. p. 394.

For an account of many varieties and anomalies of epilepsy, vide Tissot, *Traité de l' Epilepsie*.

† Aretæus thinks that the disease begins to remit, on the excretion of fluids from certain parts. The strangulation becomes less when an inundation of humours bursts forth from the nose and mouth. Foam, he says, is thrown out, as by the sea agitated by violent storms, and the symptoms disappear. Ἀφρὸν δὲ ἀποπτύουσιν ὥσπερ ἐπὶ τοῖσι μεγάλοισι πνεύμασι ἡ θάλασσα την ἄχνην.

*De Caus. et Sign. Acut. Morb. lib. i. c. 5.*

regular, the countenance more composed, and the patient falls into a state of somnolency or profound sleep, on awaking from which, he by degrees returns to his usual state, nothing more than languor or lassitude remaining.

The paroxysms of epilepsy in different cases greatly vary, both as to their degree, their duration, and the time of their return. When the disorder appears in its worst form, and in its highest degree, it is attended with the frightful circumstances and symptoms above mentioned; and the description which I have given, is by no means an exaggerated account of it. Much more frequently, however, it appears in a milder form, when the patient, with or without warning, falls to the ground, remains for a short time convulsed, and soon passes into a state of quiet sleep. Sometimes the fit happens in the night, and the patient on awaking in the morning, feels nothing more than a slight weakness and oppression. In some cases, the epileptic person does not fall to the ground; and experiences no inconvenience further than that of some agitation of the head or

limbs, attended, however, with a loss of sensation, and voluntary motion, in a greater or less degree. — In many cases, even of slight epilepsy, some foaming at the mouth is observable. — Both in the severe and the mild disease, the patient, on recovering, seems wholly unconscious of what has happened during the paroxysm, only recollecting circumstances which occurred previously to its accession. Aretæus has described epilepsy in both its forms, and has given it a place both among the acute and chronic diseases. Speaking of the acute epilepsy, he says, it is an evil of a various and portentous kind, fierce in its paroxysms, acute and pernicious, or deadly ; for sometimes a single fit proves fatal.\* In the fifth chapter of his first book, *De Signis et Causis Morborum Acutorum*, he has very minutely, and with much elegance and power of language, detailed the history of this disease. Paulus Ægineta likewise describes

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\* Ποικιλον ἤδε ἀλλόκοτον κακὸν ἡ ἐπιληψία· θηριῶδες μὲν ἐν παροξυσμοῖσι, καὶ κάτοξυ, καὶ ολέθριον ἔκτεινε γάρ ποτε παροξυσμος εἷς. *Aret. de Caus. et Sign. Acut. Morb. lib. i. c. 4.*



epilepsy under two forms; the one proving suddenly fatal, the other of long duration, which, if not mitigated or removed at the time of puberty, or of pregnancy in women, at last destroys the patient. Alexander Trallianus, and the other Greek medical writers, agree in opinion with Aretæus and Paulus on this subject.

Epilepsy varies not only as to its form and degree, but as to the duration of the paroxysms, and the time of its return. Accounts of great varieties in these respects, might be adduced from numerous authors. The fits may last for a few seconds or minutes, or for many hours.\* In the case of a girl twenty years of age, the paroxysms, though not very strong, always lasted for fourteen hours.† — The ordinary duration of these attacks, is from ten to twenty minutes, when, the disease having arrived at its height, the respiration becomes more slow and easy, and the other symptoms disappear.

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\* Tissot.

† Barbette.

The time of the return of the paroxysm is also various. In different persons the periods of their recurrence are very different; and even in the same person they are seldom regular. We have, however, on record, a few instances of the contrary, when the disease has recurred every day, or week, or month, or at every new and full moon, or in the spring and autumn of the year, or at the end of one, or even two years; but, generally speaking, the intervals of paroxysms are quite uncertain. In some cases the fit returns with great rapidity. An eminent pathologist tells us, that he has seen many epilepsies, in which patients suffered several paroxysms in the course of twenty-four hours.\* In a few instances this complaint has disappeared for several years, and afterwards returned. A case of this kind is recorded, in which, after an interval of thirteen years, the disease returned, with more frequent and more violent paroxysms than before.† Dr. Abercrombie thinks epilepsy one of the

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\* Van Swieten.

† Heberden.

most obscure and difficult subjects in medical pathology. Referring to the modification of it, which depends upon organic disease, he says, a remarkable circumstance in regard to it, is, the long intervals which sometimes occur, though the cause remains the same. He describes a case in which the patient had been free from the fits for many months, when, on a sudden fright, they returned at short intervals, and continued to recur till his death.

The terminations of epilepsy are likewise various. After frequent attacks, it sometimes ends in apoplexy, sometimes in paralytic affections, particularly of the nerves necessary to hearing and vision; but its common termination is in idiotism or fatuity. The faculties of the mind, especially the judgment, the memory, and the imagination, gradually fail, and a total imbecillity supervenes. Innumerable instances of this kind might be quoted from Van Swieten, Tissot, and others. I know no author who has more impressively described the wretched state of those who have long laboured under this disease, than Aretæus, in the fourth chapter of his first



book, *De Causis et Signis Acutorum Morborum*:

If the disease, he says, be of long duration, patients suffer from it, even in the intervals of paroxysms. They become torpid, languid, and dejected; they avoid the sight and the society of men; time does not afford any mitigation of their sufferings; they are often oppressed with watchfulness, and when they do sleep they are terrified with horrible dreams; they loath food, and digest with difficulty; their natural colour disappears, and changes to a leaden hue; they have a difficulty of comprehension, on account of torpor of mind and of sense; they are dull of hearing\*, are affected with a ringing in the ears, or a confused sound in the head; the tongue is unable to do its office, either on account of the nature of the disease, or from injuries which it may have received in the paroxysms; they are agitated by convulsions; and sometimes the mind is so disturbed by the complaint, that persons labouring under

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\* Νωδία γνῶμη τε, καὶ αἰσθήσις·

it become quite fatuous, or idiotic. — He describes these wretched sufferers, dragging on a miserable existence, in pain and ignominy \* ; and sometimes, by the violence of the disorder, driven even to madness.

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\* Ζῆ μὲν ἄισχέα καὶ ὀνείδεα καὶ ἄλγεα φέρων

*Aret. de Caus. et Sign. Morb. Acut. lib. 1. c. 4.*

## CHAP. II.

*Dissections.*

As an account of the appearances observed on the dissection of persons who have died of epilepsy may assist us in endeavouring to understand the nature, causes, and distinctions of the disease, I shall, previously to my consideration of the latter subject, communicate what I find most valuable on the former.

On the dissection of persons who have died of epilepsy, or subject to that disease, morbid appearances have been found in various parts, but chiefly within the cranium, many of which are similar to those which I have repeatedly described, when treating of apoplexy and palsy. These are chiefly effusions and tumours of various kinds; abscesses; exostoses; depressed portions of bone, sharp-pointed spiculæ, &c. which may mechanically press upon and injure the brain and its investing mem-



branes. After epilepsy, marks of disease have been found in the investing coats of the brain, on its surface, in its substance, and in its ventricles, from wounds, contusions, abscesses, and the like.\* The blood-vessels of the brain are very often found greatly distended; a modern author says, that in this disease the most frequent morbid appearances are those of vascular turgescence, and its consequences.† This appears probable, when we consider that epilepsy very frequently terminates in apoplexy. Considerable effusions of blood, alone, or mixed with water, or blood in a concrete state, are often seen in various parts within the cranium after this disorder; for a particular account of which I refer to the dissections of Bonetus, Lieutaud, Morgagni, Tissot, and other writers. According to their accounts, however, the most common appearance in these cases, is that of serum effused in various parts of the brain. A great quantity of this fluid has been seen overflowing the sinuses, and

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\* Boerhaave.

† Mansford.

washing the whole substance of the brain, filling the head, and effused into the ventricles. A thin limpid water, of a yellowish colour, has been often observed in these cavities; sometimes in a large quantity. In one case, the two lateral and third ventricles contained as much as two pints of this fluid. \*—In the heads of epileptic persons, says Morgagni, yellow and acrid serum, a yellowish lymph, and a citron-coloured water of a saline taste has been observed, but more frequently a thin pure limpid water.

A mucous viscid humour, or jelly-like substance, has in some instances been found after epilepsy, in various parts of the brain; abscesses also, deep seated in the substance of that organ, containing pus in considerable quantity, have been seen; in one case, as much as three ounces was observed; in another, a foetid fluid was effused between the dura mater and the cranium, and in the cerebrum itself.—In the case of an officer of cavalry, who had become epileptic

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\* Bonetus.

in consequence of a fall from his horse, an abscess was discovered, which had been produced by a large sharp-pointed piece of bone, which had injured the dura mater. \*

On dissection after epilepsy, a great variety of other morbid appearances have been observed, particularly mal-conformation of the skull; a diseased state of the meninges; a too great hardness or softness of the brain; many morbid affections of the cerebrum and its investing membranes, from injuries done by wounds, blows, falls, and fractures.—In various parts within the cranium, schirrous tumours, fatty or flesh-like tubercles, and hydatids in the vessels of the plexus choroides, have been seen by those who have particularly examined persons who have died after this disease. For an account of these I must refer to Bonetus, Morgagni, Lieutaud, and others.

It is strange, that in the accounts of morbid appearances found after epilepsy, on dissections made by eminent anatomists, no notice has been taken of the state of the

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\* Bonetus.



cerebellum. This is the more surprising, as a celebrated modern physiologist confidently asserts, that, on examinations made by him, the cerebellum has *always*, in these cases, been found very greatly injured. The person to whom I allude is Monsieur Wenzel, professor of anatomy and physiology, in the College of Mayence, who enjoyed great opportunities for observation, and who shewed great zeal and diligence in instituting anatomical examinations relative to this subject. The result of his enquiries has been published by his brother, under the title, *Observations sur le Cervelet, et sur les diverses Parties du Cerveau, dans les Epileptiques*. As this work is very interesting, and seems to be but little known in this country, I shall here introduce a short account of it. M. Wenzel informs us that, having for a long time lamented the sad condition of persons suffering from the attacks of epilepsy, and the inefficacy of medicine in such cases, which he in a great measure attributed to our ignorance of the nature and causes of the disease, he had determined to study the complaint with par-

ticular care, in order that he might, if possible, obtain a knowledge that would enable him to afford relief to the wretched objects who had so greatly excited his compassion. Being persuaded, however, that a single individual could make but a slow progress in such an enquiry, he instituted a society for the express purpose of assisting him in this investigation. This society, which consisted of M. Militer, professor of chemistry and pharmacy at Mayence, and several other physicians of eminence, entered completely into M. Wenzel's views, and agreed to make idiopathic epilepsy the object of their particular attention ; to endeavour to ascertain its nature and causes ; to make diligent observations on the effects of new medicines ; and to select for their study such cases as had been of long standing, and in which the remedies usually employed had been found inefficacious. A great variety of modes of treatment were employed by M. Wenzel, and his associates, but without success. Not discouraged by this, the society resolved to persevere, and to institute new trials, at the same time determining

to make very careful examinations, by dissection, in order to discover, if possible, any appearances that might tend to illustrate the nature and causes of the complaint, or that might account for the failure of the medicines which had been administered.

As M. Wenzel had for many years been in the habit of dissecting the brain, he readily undertook the task of making the examinations recommended by the society ; and he was fortunate enough to obtain many opportunities for observation, of which he diligently availed himself, and from which he derived much curious, interesting, and important knowledge, which is very minutely detailed in this publication.

The account of M. Wenzel's dissections is prefaced by some very judicious and scientific instructions, as to the best mode of examining the parts contained within the cranium ; and he lays great stress on the necessity of having, for this purpose, an accurate knowledge of these parts in their healthy state, in order the better to discern their morbid condition. M. Wenzel himself was so attentive to this, that whenever



he had occasion to dissect the brain of an epileptic person, he always was provided with the head of some one who had never been affected with that disease.

Before M. Wenzel enters on the account of his examinations, he presents the reader with a particular description of the lower bones of the cranium, and of the soft parts resting on them; in which he points out their natural structure, and the changes which they undergo at different periods of life, or by general disease; and to the study of this subject he attaches much importance.

After this M. Wenzel enters upon the most interesting part of his work, namely, the description of the morbid appearances found by him on dissection after epilepsy.

M. Wenzel had an opportunity of examining the heads of twenty persons, who had died, after epilepsy of the worst kind, and he has minutely described many curious alterations of structure, singular effusions, and other marks of great and uncommon disease, or at least of disease not hitherto noticed, of parts within the cranium, which are particularly interesting.

The brain, properly so called, has been generally considered as the chief seat of disease in epilepsy ; M. Wenzel, however, in a very great proportion of the heads he examined, found that organ in a healthy state, but the cerebellum uniformly and in a very extraordinary degree and manner diseased. In fifteen of the twenty cases above mentioned, the brain was uninjured, but of the other five, in two the meninges were slightly diseased, in four, an effusion of a thick lymph was observed on the surface of the brain, and in three, a considerable quantity of water in the ventricles, in consequence of which the corpora striata and the thalami nervorum opticorum were much injured, and in one instance a softening and an enlargement of the brain was seen ; but in fifteen of the twenty the brain was found to be in a sound state.

The parts which M. Wenzel in these cases discovered to be principally affected, were the pineal gland, and the cerebellum ; the former often, the latter always, injured in a greater or less degree. In ten instances the pineal gland was almost entirely of a grey

colour ; in one, it was white in its anterior part, and of a pale red in one half of its posterior part. In another case, on the superior surface of the pineal gland, a brownish yellow transparent vesicle was observed, from which a considerable quantity of a clear yellow fluid was thrown out ; in a third, the pia mater surrounding the gland was thicker than ordinary, and partly of a red, partly of a yellow colour. The pineal gland was always found softer, and in all the instances, excepting two, smaller than natural ; in those two, however, it was much enlarged.

In three instances, the infundibulum was more firm than usual, and round about it, a thick lymph was effused, which in some places could be raised up like a membrane. The superior part of the infundibulum was in this case of a red colour, and bore marks of inflammation. In one instance, through its whole length, it was extremely red.

The most extraordinary morbid appearances, however, discovered by M. Wenzel in these dissections, were those which he found in the cerebellum. He observed that organ to be morbidly affected with re-



spect to its surface, its consistence, its colour, its size, and the state of its internal parts. In one case, the whole surface of the cerebellum appeared unequal and furrowed; in another, about the insertion of the infundibulum, there was a very large excavation, from a loss of the substance of almost the whole of its superior surface; and in a third, there was a great depression of the anterior edge of the cerebellum. In two instances, its superior surface was of a fibrous appearance, and much furrowed.

The colour of the cerebellum was sometimes of a pale, but more commonly of a dusky red, of different shades, and approaching to blackness; sometimes it was of a whitish or yellow colour, and in two instances its posterior lobe was of a pale grey.

In three cases, M. Wenzel found the cerebellum very soft, but in five others, it was harder and more compact than natural. Its size was often considerably increased; sometimes, under circumstances to be hereafter mentioned, it was prodigiously enlarged.

The most remarkable and important alterations observed in these dissections were those found in the interior of the cerebellum, which had probably occasioned its increased size, and the diseased appearances on its surface, above mentioned.

After having made one or two horizontal sections of the cerebellum, M. Wenzel, in ten instances out of the twenty, found between the lobes, at the point of their union, a yellow, friable, solid matter, which almost always had produced not only a separation of the lobes, but a loss of their substance. This matter could easily be raised in pieces. Sometimes, at the junction of the lobes, a half fluid viscous lymph was seen separating them ; sometimes, upon the superior surface of the cerebellum, spots were produced, by a collection of a perfectly white or yellowish brown lymph, which had become solid. In those cases in which the cerebellum was observed to be much enlarged, a great quantity of lymph, more or less thick, was seen between the lobes. In one instance, on separating them, a large quantity of a thick colourless fluid was thrown out, which ran to the point of their

union. M. Wenzel thinks, that if the subject of this dissection had lived longer, the fluid observed would have gradually acquired the appearance and colour of the matter seen in other cases, on examination after epilepsy. In one case, on cutting the cerebellum where the lobes touch, a round ball was observed, containing several small globular transparent bodies, much resembling the granulated substances often seen in the pineal gland. On the superior surface of the cerebellum, marks of inflammation were sometimes visible.

These were the chief morbid appearances found by M. Wenzel, in his examinations of the brain of persons who had been affected with epilepsy. For further particulars respecting these and some other curious appearances, I must refer to his publication.

When we consider, that in all the dissections after epilepsy, as far as M. Wenzel had an opportunity of making them, the cerebellum, without a single exception, was found diseased, we are quite at a loss to understand how it should have happened, that in the accounts of dissections in similar cases, made by former anatomists, no dis-



ease whatever of the cerebellum has been mentioned. — The work concludes with some general considerations and deductions from these examinations.

But besides the morbid appearances found within the cranium after epilepsy, various læsions have been observed by anatomists in different parts of the body, particularly in the heart, the lungs, the liver, the stomach, and intestines. Bonetus speaks of a gelatinous humour seen in the great veins near the heart, of a blackness of the right lobe of the lungs, and adhesions to the thorax, the brain and other parts being perfectly sound; and he describes a case in which great marks of disease were seen in the stomach and intestines of an epileptic child. He also mentions, that in a woman who had been subject to epilepsy and convulsions, the pancreas was ulcerated, and in a boy, the spleen was indurated and schirrous. Various other diseases of the viscera of the thorax and abdomen have been discovered after epilepsy; — carcinoma of the cardia, a morbid state of the liver, ulcers in the

bladder, adipose substances adhering to the intestines, schirrous affections of various parts, &c. How far some of these could with propriety be considered as immediately connected with the disease we are considering, it is not easy to determine.

Almost all authors who have written on this subject, speak of worms found in the intestines on dissection after epilepsy.\* A Dr. Prout of Paris, in the year 1804, published a work entitled *Médecine éclairée par l'Observation et l'Ouverture des Corps*, in which he has communicated many curious and valuable facts, established by dissections, respecting various diseases. Among others, he examined the bodies of many epileptic persons in the hospitals of Paris; and he assures us, that in all of them he found collections (*masses*) of worms in the intestines, generally accompanied with acrid substances in different parts of the alimentary canal.

These are the chief morbid appearances observed after epilepsy; but it is proper for

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\* Bonetus. Tissott. Pritchard, 106.

me to remark, that in some instances, after this disorder, no marks of disease whatever, could be found within the cranium, the thorax, the abdomen, or in any other part of the body.



## CHAP. III.

*Distinctions and Causes.*

EPILEPSY has been variously classed and distinguished by different authors. Galen considers the disease as of three kinds ; the first being a direct affection of the head ; the second primarily of the stomach, and secondarily of the head ; and the third that in which the affection begins in some distant part and ascends to the brain.

Sauvages divides epilepsy generally into the perfect and the imperfect, which he subdivides into many species, according to the causes of each. Thus he describes the *plethoric* epilepsy, the *cachectic*, the *stomachic*, &c. \*

Dr. Cullen considers epilepsy as a genus of the order, spasmi, and divides it into the *idiopathic* and *symptomatic* ; the first including three species, the *cerebralis*, the

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\* Galen de Locis Affectis, lib. iii. c. 11.

*sympathica*, and the *occasionalis*; the second containing a great number of species, according to the various diseases with which it may be connected, or by which it may have been caused.

The first species of idiopathic epilepsy, the *cerebralis*, arises suddenly, without any manifest cause, and is not preceded by any troublesome sensation, except perhaps vertigo or scotomia; the second, the *sympathica*, also arises without any manifest cause, but it is preceded by the sensation called the aura epileptica, proceeding from some part of the body, and ascending towards the head; and the third, the *occasionalis*, is produced by some evident irritation, and ceases on the removal of that irritation. The symptomatic epilepsies, as above mentioned, receive their names from the diseases to which they are related. \*

M. De Maisonneuve, an eminent physician at Nantes, who has lately published a treatise on epilepsy, highly spoken of in France, has followed Cullen in his general

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\* Cullen.

division, and has placed under the heads idiopathic and symptomatic, a great number of species. Under the first head he enumerates the *connate* epilepsy, the *spontaneous*, the *plethoric*, the *humoral* or *metastatic*, and the epilepsy caused by *moral affections*. Under the second head, M. De Maisonneuve has placed the *gastric* epilepsy, the *intestinal*, the *hysterical*, the *hypochondriacal* or *vapourous*, and the epilepsies which arise from affections of external parts.

In treating of the causes and method of cure of epilepsy, I shall consider the disease under the two general heads, *idiopathic* and *symptomatic*, the first a primary affection of the brain; the latter, that which has its origin in some other part of the system, and affects the brain secondarily.

Before I proceed to the consideration of the particular causes of idiopathic and symptomatic epilepsy, I wish to remark, that, in the list of general causes of the disease, some writers have mentioned supernatural agency, and the influence of the heavenly bodies. Many of the ancients believed that epilepsy is sometimes thus produced, and some eminent men in modern times



seem to have been inclined to these strange opinions. Van Swieten observes, that it is by no means suprising, that a disorder attended with such horrible and various symptoms, should have been ascribed to supernatural causes ; and he thinks that the disease may have been produced by such causes. In favour of this notion he relates a case, and makes a reference to Scripture.

Some learned men have thought that the persons represented in the sacred writings as possessed by demons, were epileptics. The circumstances of one case in particular are pointed out as perfectly well agreeing with those of epilepsy. — A youth is said to have been subject to attacks, in which he uttered loud cries, and fell to the ground, or into the fire or the water, being so agitated and torn by an unclean spirit, as to gnash with his teeth, and foam at the mouth. During these seizures, he is said to have been possessed by a dumb and deaf spirit. This has been understood to mean, that in the paroxysms of the disease, he was dumb and deaf. The departure of the spirit from him spoken of, has been supposed to denote the interval between the

fits. It has been observed, that the miracles wrought on the demoniacs are often described by the same terms as those used to express the miraculous restoration of persons stated to have been *diseased*. It is said equally of demoniacs, lunatics, and paralytics, he *healed*\* them. The daughter of the woman of Canaan, who was grievously vexed with a demon was *cured*, or as it is translated, made whole. †

This is the view which Mr. Farmer, in his Essay on the Demoniacs of Scripture, has taken of the subject. That learned writer maintains, that the persons spoken of as having demons, suffered real and violent disorders; that the particular diseases which the ancients, whether heathens or Jews, ascribed to the possession of demons, were such only as disturbed their understanding; that the demoniacs mentioned in Scripture, were all either madmen or epileptics, and that the doctrine of demoniacal possession, instead of being supported

\* Εθεραπευσεν αυτοις. Matthew, ch. iv. v. 24.

† Ιαθη. Matthew, ch. xv. v. 28.

by the Jewish or Christian revelation, is utterly subverted by both. In confirmation of these opinions, Mr. Farmer adduces many illustrations and authorities from ancient writers.

In the plays of Æschylus, Sophocles, Euripides, and Plautus, the persons spoken of as possessed, are either madmen, or those who personate insanity. When the Pythian prophetess was oppressed by too strong an inspiration, she was said to have been under the influence of a dumb and deaf spirit. \*

Another extraordinary assigned cause of epilepsy, is that of the influence of the celestial bodies. Several of the ancients inclined to this opinion. Galen and Aretæus thought that the paroxysms of epilepsy were governed by the moon, and in this Alexander Trallianus agrees†, and some eminent writers of later times have adopted the notion. One of them says, “ The

\* Αλλαλου και κακου πνευματῶ. *Plutarch de Orac. Defect.* p. 38.

† Alexander distinguishes epilepsies by the term σεληνιαζόμενοι. Some Latin writers have denominated epileptics, *lunatici*.



falling sickness, which is a difficult distemper, seems wonderful to physicians in this, that it has its returns every new and full moon." He adds, "Bartholinus saw a girl troubled with the falling sickness, who had spots on her face which varied in greatness and colour, according to the different phases of the moon; so great a commerce and correspondence is there betwixt ours and the celestial bodies." \* — A work was published not many years ago, by a respectable practitioner in the East Indies, in which he attempts to shew, that several diseases are under the influence of the moon†; but an eminent physician on the continent asserts, that in the course of an extensive medical practice, continued for a number of years, with his attention constantly directed to the lunar periods, he was never able to discover the slightest connexion between those periods, and the increase or decrease of diseases or their symptoms.‡ Forestus§ goes so far as to

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\* Mead.

† Balfour.

‡ Dr. Olbers.

§ Non temere judicamus decreta astrologorum antiquorum, potissimum Ptolomæi (qui sincerius de iis

suppose, that even the more distant heavenly bodies may have influence in the production of epilepsy. He says, that we ought not to disregard the decrees of ancient astrologers, particularly of Ptolemy, respecting the connection between the configuration of the stars, and the comitial disease.

I shall now speak of the usually assigned causes of epilepsy; and first of those which predispose to the disease. With regard to *predisposition* to idiopathic epilepsy, we have no clear and distinct knowledge. We cannot ascertain its nature, or even its existence in many cases, or whether or not, it be necessary to the formation of the complaint. Some pathologists are of opinion, that it is not necessary, and that epilepsy may be produced, and in some cases has been produced, by a new and

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scripsit) a medicis contemnenda esse qualia de configurationibus stellarum facientibus ad morbum comitiale scripsere. Habeo autem plurimas genituras epilepticorum, in quibus ea respondent præcipue quæ Ptolemæus de iisdem observavit.

*Forest. lib. x. obs. 60.*

strong impression in a perfectly well organized brain and nervous system, and independently of predisposition. Be this as it may, I am inclined to believe, nay, I think it is evident, that a certain constitution of brain and nervous system exists in particular persons, which renders them especially liable to this disorder ; that there is a much greater sensibility, irritability, or what Dr. Cullen calls mobility of brain and nerves, in some persons than in others, which constitutes predisposition to epilepsy.

“ We see some persons easily elated by hope, and depressed by fear, and passing quickly and readily from the one state to the other ; easily pleased and prone to gaiety, and as easily provoked to anger and rendered peevish, and liable to strong emotions from slight impressions. This is the temperament *qui colligit et ponit iram temere, et mutatur in horas* ; this is the *varium et mutabile fœmina*.”\* Whether, in all cases of idiopathic epilepsy, a particular

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\* Cullen.



predisposing constitution exists or not, it is certain, that the disease is excited, in some persons, by causes which do not produce it in others. A certain conformation of cranium, in particular, seems to predispose to epilepsy. Leduc remarks, that the head of epileptics is larger and the skull thicker than in healthy persons, and Lorry and others confirm this observation.

The predisposition to epilepsy is often hereditary, being transmitted from parents to their offspring. Many instances might be adduced of the prevalence of this disorder in particular families. Tissot mentions one, in which a father, who was subject to epileptic fits, had eight sons and three grandsons, who were cruelly afflicted with them till the day of their death. It is said, that this predisposition has sometimes lain hid in families for a generation or two, and afterwards appeared in its strong form.

That the constitution above mentioned predisposes to epilepsy has been inferred, from the circumstance that women and children, and others of delicate and weak habit of body, are more especially liable

to the complaint ; but this alleged fact is not universally admitted ; for, although Hippocrates, Forestus, and many others, both ancient and modern, are of this opinion, and although Tissot observes, that the sex influences temperament, which in women is in general weaker and more mobile than in men, Celsus, Dr. Heberden, and others assert, that epilepsy more frequently attacks men than women ; and my own experience is in favour of this opinion.\*

Perhaps this difference as to the fact in question may be explained on the supposi-

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\* Celsus says, speaking of epilepsy, *id genus sæpius viros quam fœminas occupat.*

Dr. Heberden remarks, *fœminæ cum sint viris infirmiores, videri possent etiam epilepsiæ opportuniore, quod tamen contra fieri observamus. Quamquam enim pueri et puellæ juxta corripiantur, fœminæ tamen rarius quam viri in eam incidunt.*

Tissot says, *qu' il y a sur un nombre egal de part et d' autre, autant de petit garçons epileptiques, que de filles, parce qu' alors les differences de temperament, qui caracterisent les deux sexes sont bien moins marques que dans un age plus avance.*

We are informed that the number of epileptic females in the Bicetre and Salpêtrière was in the year 1813, a third greater than that of the males in those institutions.

tion that those men are more especially the subjects of epilepsy who are of a delicate constitution of body, and of great sensibility of mind. Many men of high genius and talent have been afflicted with this complaint.\* Julius Cæsar †, Mahomet, Petrarch, and Rousseau, were subject, we are informed, to epileptic fits. Among learned persons subject to epilepsy, Van Swieten mentions Columna and Francis Rhedi.

The predisposition to epilepsy, in whatever it consists, is evidently increased by a plethoric state of body. Almost all writers have placed plethora among the predisposing causes of this malady. Hippocrates remarks, that epilepsy prevails in

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\* Van Swieten says epilepsy occurs in *viris ad summa in rebus humanis negotia capessenda natis, et scientiâ claris*.

† Suetonius informs us that Julius Cæsar enjoyed a good state of health, except that in the last part of his life, he was subject to fainting, and to terror in his sleep. He was also twice attacked with epilepsy while engaged in business. *Comitali quoque morbo bis inter res agendas correptus est. Suet. lib. i. c. 45.*



the spring ; and that a fulness of habit is one of its most frequent causes. A celebrated writer thinks that this state of body may so affect the soundest brain as to produce the epileptic disposition, which, when once formed, may be renewed on slight occasions. \* — That plethora is very frequently connected with this complaint no person can doubt. In almost every case which I have had an opportunity of seeing, the disease has occurred in full habits and sanguine temperaments. An ingenious writer, however, is of opinion that there is no temperament which is in a very decided manner more subject to epilepsy than others. He has witnessed its appearance in every variety of habit, from the most exquisite examples of the sanguine to the most marked melancholic. †

Among the predisposing causes of epilepsy, some authors mention habit. Van Swieten thinks, that when paroxysms have been excited by strong impressions, a disposition to future attacks will be thereby

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\* Van Swieten.

† Prichard on Nervous Diseases, p. 94.

produced ; and he relates the case of a girl descended from healthy parents, and perfectly well, who, having been thrown into a strong fit, was afterwards, on slight occasions, affected with the disorder for many years. — I have no doubt that a greater liability to it, or a greater disposition to its production on slight occasions, will thus arise, whether a particular constitution be, or be not, necessary to its original formation.

The *exciting* or *occasional* causes of epilepsy are of various kinds, and act in various ways. Some are stimulants, producing, it is supposed, an increased action or energy of the brain ; others sedative, operating so as to diminish that action or energy. Of these causes, some act directly upon the brain, others produce their effects primarily upon distant parts, and secondarily upon the brain.

Among those which act primarily upon the brain, the chief are mechanical causes, such as malconformation and injuries of the cranium, tumours, depressed bone, sharp pointed spiculæ, situated on the internal surface of the skull, hydatids, con-

gestions, distending the vessels of the brain, changes in its structure, or disease in its substance, and effusions of various kinds. To these may be added, causes acting mechanically on the spinal chord or the nerves, and the morbid appearances in the pineal gland and cerebellum, discovered after epilepsy by Mons. Wenzel, which have been already particularly described.

These causes appear to act mechanically, either by stimulating or compressing various parts within the cranium. That they may thus act in producing apoplexy, I have already endeavoured to shew, and that they may, in like manner, give occasion to epilepsy, I have no doubt. That the same causes should produce diseases so different in their symptoms, may appear very extraordinary ; but M. Portal has, I think, sufficiently ascertained the fact. He has proved, by experiments, that pressure on the brain, in a great degree, will occasion apoplexy, and, in a smaller degree, convulsions ; thus apoplexy, by a diminution of the power of the exciting cause, may end in epilepsy ; and epilepsy, by an increase of it, may terminate in apoplexy ; and this



indeed we very often find to be the case. Perhaps the different symptoms of these two diseases, arising from compression within the cranium, may, in some measure, depend upon the particular parts compressed. The dissections of M. Wenzel seem to give some probability to this conjecture.

Among the causes thus acting, one of the most frequent is partial plethora. After epilepsy, the vessels of the brain are often found overloaded with blood, and in a state of great distention.\* The celebrated anatomist, Meickel, declares, that in his numerous examinations of the brain, he had never seen such an *engorgement* as in that of an epileptic in the hospital at Berlin. A late writer asserts, that by far the most frequent, and most certain of the causes, occasionally giving rise to epilepsy, and which may be said to accompany and perpetuate the disease, by whatever cause

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\* This, however, is not a positive proof that the vessels were overloaded before, as the paroxysm itself has a tendency to produce the effect.

excited, is an increased momentum of blood in the brain. \*

Dr. Prichard, in his observations on the pathology of epilepsy, remarks, that the immediate cause of an attack, or that physical change which, in a constitution prepared by natural predisposition, or by the action of morbid circumstances, is the immediate precursor and occasion of the fit, appears to be a preternatural influx of blood into the vessels of the encephalon, or an unusual fulness in some part of the vascular system of that organ; and he adduces a variety of reasons on which he founds this opinion.

As partial plethora is an immediate exciting cause, whatever tends to produce or increase it must be considered as a remote cause, such as violent exercise, great heat, intoxication, and certain passions of the mind, particularly joy and anger. Drelincurtius, a Leyden professor, relates the case of a strong plethoric young man, who, while playing at tennis soon after a

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\* Mansford.

full dinner, was seized with a violent epilepsy, of which he died. On examining the head in this case, the arteries, both of the brain and its membranes, were found full of a black thick blood, a part of which had broken through the vessels. A description of the effects of these causes, and some conjectures as to their *modus operandi*, where partial plethora is present, has been already given in my account of apoplexy, and to that I beg leave to refer.

These appear to be the chief exciting causes of epilepsy, acting primarily on the brain mechanically, or by their stimulating power, producing an increase of its energy, to which Dr. Cullen adds chemical stimulants, such as fluids lodged in certain parts of that organ, which become acrid by stagnation or otherwise ; but of the existence of such I much doubt.

There are other causes which also produce their effect primarily upon the brain, but probably by a sedative power, or by diminishing the energy of that organ, or as Dr. Cullen calls it, by collapse. These are depressing passions of the mind, fear, terror, or grief; disagreeable impressions



on the imagination and senses; the recollection of former paroxysms, or their causes; and whatever greatly weakens the action of the heart, as hæmorrhage, or other excessive evacuations.

That epilepsy is frequently excited by passions of the mind is universally admitted by pathologists. Of these some appear to act by increasing, others by diminishing the energy of the brain. The former are joy and anger, the latter are fear, terror, and violent grief, especially when sudden. Innumerable examples of the operation of these causes might be quoted from various authors, both ancient and modern. Some fall down, says Aretæus, in this disease, oppressed with sorrow; some terrified by shadowy appearances, or by the dread of a sudden attack from a wild beast. Van Swieten informs us, that a lady of a strong constitution, who had always enjoyed robust health, was, during pregnancy, so much terrified by the appearance of a dreadful fire in the neighbourhood, as to be affected by epileptic fits, which at length proved fatal.— I never saw, says an eminent French physician, a more distressing case of epi-

lepsy, than that of a female, who, on receiving a very gross insult from an insolent blockhead, was two hours afterwards seized with a violent attack of that disease, which returned three times in the following night ; and although she had the best advice, the disorder increased, from which she was never free for more than a day, for many years, dragging on a most miserable existence.\* A celebrated German physician informs us, that in six out of fourteen epileptic patients, under his care in the hospital of St. Mark, at Vienna, the disease had been occasioned by terror.† A monk at Rome, on suddenly receiving the news of the death of his brother, became epileptic, and suffered two or three fits daily.‡ A man travelling by night met a large dog in a narrow path, and fancying that he was seized by the animal, he arrived at home in great terror, and the next morning had a violent fit of epilepsy, which afterwards returned a great many times. It always began with a violent cramp in the hands,

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\* Tissot.

† Locker.

‡ Schenck.

which, ascending by the throat, and then descending to the heart, deprived him of sense. \* A young man having witnessed some of the dreadful events at Paris on the horrible 10th of August, became affected immediately with this disorder. † — We have several cases on record in which epilepsy appears to have been produced by the power of imagination. A boy, of a sound and good constitution, became epileptic immediately after drinking out of a cup from which he had seen an epileptic person drink. ‡ A robust man having dreamed that he was pursued by a bull, on awakening in great agitation and in a state of delirium, in a quarter of an hour fell down in a strong fit. § A servant maid at Leipsic, endeavouring to untie some knots, and fancying that one of them was made by a sorceress, became so terrified that she was seized with this disorder, which was followed by several others. ||

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\* Tissot.

† Maisonneuve Recherches sur l'Epilepsie.

‡ Schenck.

§ Tissot.

|| Tissot.



Disagreeable and powerful impressions made on the senses have, it is said, often given occasion to this disease. Aretæus remarks, that epilepsy may be excited by disagreeable odours, as by the smell of the lapis gagates (jet); and we are informed, that the antients, in purchasing slaves, were in the habit of exposing them to the fumes which proceed from this substance when burnt, in order to discover whether or not they were subject to the disease. \*

In some cases, loud and disagreeable sounds are said to have excited the complaint. Schenck mentions instances of this sort. He states that a boy became epileptic from the sudden and loud sound of trumpets, and that the disorder so produced proved fatal; and he speaks of several terrifying noises which have been found capable of giving occasion to such paroxysms. † — Objects offensive or shocking

\* "Ἄλλοτε δὲ ὁσφρησις βαρεῶν ὀσμων κατέβαλε, ὥσπερ γαγατου λίθου. *Aret. de Caus. et Sign. lib. i. c. 5.*

† Incondita hominis vociferatio, aut obscœnus animantis mugitus, seu gravis cœli tonantis fragor, vel perstrepsens clangentium tubarum sonitus. *Schenck, Obs. xiii.*

to the sense of seeing have also been mentioned among the exciting causes of the disease. A M. Buchner, in a dissertation on certain complaints of children, informs us, that in a child, subject to epilepsy, a paroxysm was always occasioned whenever an object of a vivid red colour was presented to his eyes. — It is well known that the sight of a person in a fit of this kind has often excited it in others. Schenck mentions a case of this kind.\* It may be a question, says an eminent writer, whether this effect be imputable to the horror produced by the sight of the seemingly painful agitation of the limbs, and of the distortions in the countenance of the epileptic, or if it may be ascribed to the force of imitation only.†

The recollection of former paroxysms, or of ideas, or circumstances with which

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\* Vidi pueros, quibus per jocum incussus est terror, qui deinde morbo comitali premebantur, et alium, qui cum attente inspexisset eum qui in comitalem inciderat, subito eo malo correptus cecidit.

*Schenck, Obs. lib. i. p. 116.*

† Cullen.

they may have been associated, have, in some instances, given occasion to epilepsy. Galen, in his *Consilium pro Puero Epileptico*, advises that every thing should be avoided which might recall the disease to the mind of the patient. Van Swieten mentions the case of a boy who, having been terrified into epilepsy by the attack of a large dog, was always afterwards thrown into a paroxysm by the sight, or even barking, of such a dog.

The suppression of cutaneous eruptions, or of evacuations to which the body has been accustomed, has sometimes given occasion to epilepsy. Instances of this kind might be adduced from various writers. \* Cartheuser observes, that the pernicious custom of repressing *tinea capitis* by cold lotions, renders epilepsy a common disease in Sweden. Several cases are on record, in which the sudden repression of the itch has been followed by epileptic fits. Instances of this are mentioned by Tissot, and in the *Dictionnaire des Sciences Medicales*.

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\* Tissot, p. 131. 135. *Journal de Medecine*, tom. xxx. p. 440. *Monro, Acct. of Diseases, &c.* 237.



These exciting causes act upon the brain primarily in the production of epilepsy. Other causes may be mentioned, some stimulant, some sedative, which act primarily on other parts, and secondarily on the brain. These are chiefly morbid or irregular affections of the spinal chord, or of the nerves in distant parts of the body, or in their course towards the brain ; worms or acrid substances in the stomach and intestines ; calculous concretions in the kidneys, ureters or bladder ; and some poisons, both vegetable and mineral.

That epilepsy is sometimes connected with a diseased state of the spinal marrow, appears from the dissections of Dr. Esquirol of Paris ; and that injury done to the nerves, or that a morbid state of them, has in many instances given occasion to epilepsy, appears from the writings of Forestus, Van Swieten, Tissot, and several others. In the *Edinburgh Medical Essays and Observations*, a case is related of a violent epilepsy which frequently occurred, which was produced by a hard cartilaginous substance, of the size of a large pea, situated upon a nerve. That this was the cause, was

evident, as the disease ceased on the extirpation of the tumour.\* In the same Journal we have an account of epilepsy depending upon a calculus of an irregular figure, about the size of a nut, pressing on a branch of the sciatic nerve; and another, in which the par vagum was compressed by a concretion of a similar kind.

Among the causes producing epilepsy, by acting primarily upon other parts, and secondarily upon the brain, we may reckon whatever may occasion irritation in the stomach or intestines. That irritation of the stomach will produce epilepsy, we may easily believe, when we reflect that that viscus has a great many nerves from the par vagum and intercostale, and that it is an organ exposed to a prodigious number of irritating causes.† M. de Maisonneuve, in his observations on gastric epilepsy, gives a very curious account of the disease, as it occurred in eighteen persons, who having been shipwrecked, were

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\* Edinburgh Med. Essays and Obs. vol. iv. art. 27.

† Tissot.

reduced to the necessity of drinking sea water, and eating indigestible food for several days. Of these eighteen persons, only four recovered from the disease; the paroxysms of which had been frequent and very violent.\* Dr. Prout says, that epilepsy often depends on an excitation of the nerves of the viscera of the abdomen producing a disordered state of the functions of the brain: and he thinks that the direct causes of such an excitation are, acrid solids or fluids; bile; but principally worms. On opening the bodies of epileptic persons, particularly of those cut off by the disease in the fit, this writer found the arterial system strongly developed in the small intestines; while the larger intestines were seen containing a greater or less number of worms, particularly of ascarides. These worms were chiefly found in the cœcum, and the ascending portion of the colon. The mucous membranes of these bowels were more or less inflamed,

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\* *Recherches et Observations sur l' Epilepsie*, p. 229.



according to the vigour of the patient, and the duration of the disease. Dr. Prout has adduced sufficient ground for belief, that irritations in the intestines from these causes, are capable of producing the most serious disturbances in the nervous system, which may give occasion to organic and incurable changes in parts at a great distance from them. Indeed he has proved in several instances, that such changes have actually been so produced. The dissections and observations of this ingenious physician are well worthy of attention. They are very extensive and minute, and appear to have been made independently of any particular view or hypothesis.

Almost all modern writers on epilepsy mention worms among its most common causes. — Van Swieten observes, that by creeping in the intestines and stomach, they irritate and hurt those parts, and frequently produce the disease ; and he relates the case of a boy, two years of age, of a good constitution, who died of violent and continued convulsions, in whom the duodenum was found perforated by a round worm, which

was taken alive out of the body.\* Numerous accounts of epilepsy arising from this cause, may be found in Bartholinus, Stahl, Heister and Wepffer. This last author mentions the case of a girl, three years old, who for several months had been epileptic, and in constant pain, who was cured by spontaneously voiding a large tape worm; and of another, who at the age of seven became cataleptic for three years, and afterwards epileptic, with such frequent paroxysms, as to occasion a total imbecility and absolute loss of memory, who, on voiding a single worm, was restored to perfect health, and the enjoyment of all her faculties. — I have seen some cases of epilepsy, in which the disease has ceased on the discharge of worms; and others in which it appeared to have been cured by anthelmintics, although no worms could be discovered in the evacuations.

Irritation, arising from biliary concretions, and from calculi in the kidneys, or urinary bladder, have sometimes given occasion to

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\* Van Swieten. § 1075, a lumbrico terete.

epilepsy. M. Fabricius, a celebrated professor at Helmstadt, has given an account of the case of a woman who was subject to this disease, probably from biliary concretions, as a very great number of them were found, on dissection, in the gall bladder; and several of the ancient, and some modern physicians have attributed the complaint in many cases to acrid bile. — Tissot\* has quoted from Bartholinus and other authors, a variety of instances in which epilepsy appeared to have been caused by calculous concretions in the kidneys and ureters; and particularly one from La Motte, which is very curious, and very minutely described.

We are told, that epilepsy has in many instances been caused by poisons, or by food of difficult digestion, or by acrid substances of various kinds received into the stomach. In certain cases it has been produced by mushrooms †, leeks ‡, and some kinds of fish, particularly eels§; more especially if eaten in too great a quantity.

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\* Tissot. † Sennestus. ‡ Schenck. § Forestus.



— Wepffer states, that eight children out of ten, who had eaten of the root of the *cicuta aquatica*, became affected with epilepsy.

Certain mineral poisons, particularly lead and arsenic, have in some instances given occasion to this complaint. Sir George Baker, in his account of the deleterious effects of lead, attributes to it the power of producing not only palsy, but also epileptic fits ; and Dr. Warren, in the Medical Transactions of the College of Physicians \*, mentions one instance in which this poison in solution caused a fatal epilepsy. — In June 1802, Dr. Warren says, “ thirty-two persons in the duke of Newcastle’s family, then residing at Hanover, were seized with the *colica pictonum*, after having used for their common drink, a small white wine that had been adulterated with some of the calces of lead. They were all attacked in the common way, excepting one, whose first seizure was an epileptic fit. As soon as the fit was over, he complained of pain in the bowels,

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\* Vol. ii. p. 86.

his head was affected again, a disorder like St. Vitus's dance came on, and in less than a fortnight from the first attack he died epileptic." Mr. Marshall, an eminent surgeon, relates the cases of five persons, who became affected with epilepsy, in consequence of their having swallowed a small quantity of arsenic; and Dr. Roget, in his account of the secondary effects of that poison received into the stomach, mentions this disease. \*

Epilepsy not only frequently arises from local irritation, but it is often connected with several general morbid affections, particularly those of the nervous system, and of the abdominal and pelvic viscera. It is also sometimes connected with certain exanthemata; with painful dentition; with pregnancy and parturition; and with the state of the body during sleep. — These are the epilepsies which authors have described under the denomination sympathetic.

Epilepsy very frequently alternates with apoplectic and paralytic affections. I last

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\* Med. Ch. Trans. vol. ii. p. 155.

year attended a gentleman of about 45 years of age, who, after a slight fit of apoplexy, became affected with compleat hemiplegia, accompanied with a total loss of the power of speech. After a few weeks, the paralysis diminished, and the power of speech was almost entirely restored, when he was seized with epileptic fits ; and after a few attacks of them, he again became apoplectic, and died.

The visceral diseases connected with epilepsy are chiefly those of the intestines and stomach, the liver, and the uterus. A great many cases of these sympathetic diseases may be found in various systematic writings, and in the medical journals. M. de Maisonneuve has, at considerable length, described the epilepsies connected with a morbid state of the stomach, intestines, and uterus, to which he gives the names gastric, intestinal, and uterine epilepsy. The gastric epilepsy is distinguished by a sensation of weight or of pain in the epigastric region, affecting the head also, just before and after the fit. During the paroxysm there is a frequent disposition to vomit, and sometimes a bloody saliva is brought up.



The intestinal epilepsy is characterised by uneasiness in the bowels ; sometimes with pain, a sense of heat or cold, or tension in the hypochondria, or the umbilical region, proceeding towards the head immediately before the attack. — In the hysterical epilepsy there is a sensation of pressure in the umbilical region, with a sort of suffocation, or the feeling of a ball rising to the throat. The convulsions in these cases are often violent, but not of long duration. There is sometimes a vomiting in the paroxysms, and they occur chiefly at the menstrual periods. The hysterical epilepsy is connected with a suppression, a deficiency, or an irregularity of the menses. — M. de Maisonneuve \* has very particularly related several cases in illustration of these various kinds of epilepsy. Tissot treats on this subject very much at length ; and to his work I refer. †

Some writers on the diseases of women, mention epilepsy as occasionally produced

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\* *Recherches et Observations sur l'Epilepsie*, p. 216. 275.

† Tissot, p. 48.

by pregnancy. Tissot mentions several cases of this kind, two of which fell under his own observation. In one of them, the patient had, in three pregnancies, experienced an epileptic paroxysm almost every week, till the motions of the child were perceived; and, in the other, during the two first pregnancies, a fit took place in almost every month. He also mentions a curious case from La Motte, who states that a woman, having been pregnant eight times, thrice with male, and five times with female children, was frequently attacked with epilepsy during the former, but never during the latter of these gestations.

On the subject of sympathetic epilepsy, much valuable information has been communicated by Dr. Prichard, in a treatise lately published by him on nervous diseases, from which I shall make a few extracts.

Dr. Prichard is of opinion that disorders of the nervous system are, in the majority of cases, secondary and sympathetic affections; that they are often, at least, symptoms of some latent disease, particularly in the organs which are subservient to the

natural functions. Dr. Prichard very satisfactorily points out the connexion which epilepsy has with various other morbid affections — with those of the nervous system, and with those of the uterine and intestinal functions. He describes the epilepsies connected with a disordered state of the liver and other viscera, and those arising from metastasis.

With respect to the connexion of nervous disorders with each other, Dr. Prichard says, “ epilepsy is a distinct disease from apoplexy and palsy, and yet its relation to both is very near; and they all frequently pass into each other. Persons who have partially recovered from a recent apoplexy, are often assailed by convulsions, which display most of the phenomena of epilepsy; and fits of the genuine epileptic character frequently occur after an attack of hemiplegia. On the other hand, persons who fall victims to repeated fits of epilepsy, perish under all the symptoms of apoplexy; and others, who recover from a severe fit, or from frequent repeated fits of epilepsy, are often found to labour under hemiplegia, or other modifi-



cation of palsy. Sometimes persons who have long suffered under epilepsy, lose this disease, and become permanently paralytic.” \* Dr. Prichard also thinks that “insanity is still more intimately connected with epilepsy. In very severe and inveterate cases of epilepsy, the paroxysms of this disease are often followed by attacks of maniacal delirium, which are generally of the most violent kind. These fits of madness most commonly abate in a few days after the epileptic attacks have ceased; in other instances, however, the maniacal state is of longer continuance, and epilepsy is sometimes the harbinger of a permanent and hopeless insanity.” †

There is likewise a connexion between epilepsy, chorea, and hysteria. The epilepsy connected with the functions of the uterus, which Dr. Prichard denominates *uterine*, chiefly affects young females of the sanguine temperament. It makes its appearance in general about the age of puberty, or when the catamenia have taken

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\* Prichard, p. 59.

† Prichard, p. 62.

place naturally, and have been suppressed. "There is often nothing peculiar in the character of the fits that belong to uterine epilepsy, that distinguishes them remarkably from the fits of epilepsy arising from other causes. They sometimes commence with the aura epileptica; at others, are preceded by pain in the head, pulsation of the carotids, and vertigo: not unfrequently they take place without any premonitory sign. The character which has appeared to me," says Dr. Prichard, "to belong more particularly to the paroxysms of uterine epilepsy, is the form which I have termed leipothymia." \*

Dr. Prichard is convinced, he says, that he has "seen many cases of inveterate epilepsy, which were of that description which is generally termed sympathetic. The disease had its origin in a disorder of the intestinal canal, or in some other of the natural functions, and could only be cured by removing the primary complaint, and not by the exhibition of a set of medi-

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\* Prichard, p. 139.

cines, supposed to be possessed of certain anti-epileptic powers." \*

I have already mentioned irritation in the bowels from worms, among the indirect causes of epilepsy, To this cause Dr. Prichard refers, but observes, that in some of these cases "it may be doubted, whether the fits are occasioned by the irritation of worms, or by the noxious effect arising from vitiated secretions, and from the accumulated sordes in the canal, which are co-existent with worms. It is certain, that equally severe effects often arise from this cause, when there are no worms, or at least when none can be discovered by the most careful examination." † "The convulsive attacks to which young infants are liable, generally proceed from irritation in the primæ viæ. During the period of dentition, when the constitution is generally disturbed, the bowels often fall into an irregular state; and this circumstance is sometimes the precursor of convulsive paroxysms." ‡ In such cases a variety of

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\* Prichard, p. 252.

† Prichard, p. 253.

‡ Prichard, p. 254.



symptoms occur, which are supposed to denote the presence of worms in the intestinal canal, though it often appears on examination that they do not exist.

Dr. Prichard also describes epileptic and other convulsive attacks by metastasis to the brain, from the healing of old ulcers, and the recession of exanthemata\*, of gout and rheumatism, of the inflammation of serous membranes†, of dropsical inflammation‡, and from the removal of tumours. §

The nature of the connection betwixt epilepsy and dentition, some of the exanthemata, and the state of the brain in sleep, is very obscure ; but that such a connection as above mentioned, exists, cannot, I think, be doubted. The relation of epilepsy to gestation and parturition is also obscure. On this head Dr. Prichard has made some ingenious remarks in the first section of his fifth chapter on the pathology of nervous diseases connected with the state of the

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\* Prichard, p. 216.

† Ibid. p. 221.

‡ Ibid. p. 225.

§ Ibid. p. 230.

uterine functions. For a further account of Dr. Prichard's view of these subjects I must refer to his valuable work, in which he has illustrated his opinions by many useful practical observations from a great number of cases.

With respect to the proximate cause of epilepsy we do not possess any satisfactory knowledge. A variety of theories have been offered for the illustration of this subject, but they all seem in some respects objectionable.

The ancients were very generally of opinion, that the immediate cause of this disorder is a pituitous humour in the ventricles of the brain, and that the symptoms were produced by an effort of nature to relieve herself from the pressure of this humour.

Boerhaave and Van Swieten consider epilepsy as consisting in a too great action of the brain upon the nerves of motion without any upon those of sensation, taking it for granted, that the nerves of sensation and motion are distinct.

Dr. Cullen observes, "as to the proximate cause of this disease, I might say

that it is an affection of the energy of the brain, which, ordinarily under the direction of the will, is here, without any concurrence of it impelled by preternatural causes; but I could go no further. For, as to what is the mechanical condition of the brain in the ordinary exertions of the will, I have no distinct knowledge, and therefore must also be ignorant of the preternatural state of the energy of the brain under the irregular motions here produced.”\* He seems to have been of opinion, however, that the disease consists sometimes in a too great excitement of the brain, sometimes in collapse: but how states so opposite should give occasion to the same symptoms we cannot well conceive; and Dr. Cullen confesses that he does not attempt to form the indication of a cure from a knowledge of the proximate cause of the disease.

An ingenious modern writer † says, there is every reason to believe that the immediate cause of epileptic spasms is a temporary local turgescence of the cerebral

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\* Cullen, vol. iii. p. 150. † Dr. James Johnson.



vessels, which local turgescence is determined by a temporary superexcitement in the nervous structure of the parts on the well known principle, *ubi irritatio ibi fluxus*.

Plethora is undoubtedly very frequently found in connexion with epilepsy as well as apoplexy and palsy ; but I think it may be more properly considered as the exciting than as the proximate cause. — Plethora seems to act by pressure on the brain and other parts within the cranium, and, applied in different degrees, appears to produce different diseases. — When made generally and in a great degree, it occasions apoplexy ; when partially, palsy ; when in a small degree, convulsions. It is very difficult, however, to understand how the same cause should excite diseases so different in their symptoms.

Mr. Mansford, in his researches into the nature and causes of epilepsy, considers plethora, especially partial plethora, as a remote cause of the disease ; the proximate cause in his opinion being of a very different nature. He thinks, that it consists in an accumulation of the electric matter

in the brain, excessive with respect to its existing capacity. Mr. Mansford thinks that the nervous and electric fluids are the same ; this he infers from a variety of experiments, of which, however, he does not give an account, but chiefly from the phenomena of the torpedo. He is of opinion, that the mind or will, the primary motive power, acts through an intermediate motive power, the electric fluid, in the phenomena of motion ; that different parts of a living body may retain opposite states of electricity although surrounded by conducting media ; and that the brain is the organ appointed for the formation and preservation of this fluid, where, in a state of health, it is controlled by the will in opposition to its natural tendencies. He supposes that the voluntary motions of the body are the result of a subtile and mobile matter, answering in its nature and properties to the electric fluid, transmitted by an act of the will from the brain to the muscles. “ In a state of health, the principle of life, he thinks, is fully competent to regulate the formation and the retention or discharge of this substance ; but if it be

weakened by disease, so that it may be unable to control that portion with which the brain is already charged, or to prevent its increase, or transmit it to the distant parts, the balance between its formation and expenditure being destroyed, an accumulation must happen, which arriving at its maximum, the point beyond which the brain cannot be charged without injury to its structure or functions, or perhaps without endangering life itself—the vital principle being absolutely overwhelmed, and losing its command, the motive powers of the system become for a time obedient to those laws which would govern them in any other situation, and from the points in redundancy to those in deficiency; when the vital principle, being freed from the load which threatened its existence, resumes its seat and its power.”\* Mr. Mansford endeavours to explain how these states may arise; for an account of which I must refer to his book. Some parts of Mr. Mansford’s theory are, I think, obscure. I have, how-

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\* Mansford, p. 64.



ever, endeavoured to avoid misrepresentation, by giving an account of it in his own words.

Some modern physiologists are of opinion, that the immediate or proximate cause of epilepsy is a derangement of the organization of some part or parts of the brain and nerves within the cranium ; and though this hypothesis is attended with several difficulties, it is by no means the least plausible that has been offered on the subject.

In epilepsy sensation is impeded, and motion is morbidly increased, and is no longer performed in obedience to the will. Now it is not unreasonable to suppose, that this may depend upon a deranged state of the organization of certain parts within the cranium, because we can have no doubt that whatever be the nature of the sentient, willing, and first moving power, it acts, and is acted upon, through the medium of organized matter ; and, because on dissection after epilepsy, derangements of the organization of parts within the cranium have been very often actually found. — In order that the perceiving power may act perfectly, it

would seem that its instruments must be perfect. — For the perfection of vision, the organ of sight must be unimpaired. If the eye be obscured, sight will become obscure ; if its transparency be restored, distinct vision will be restored. — Similar observations might be made respecting the other senses.

To the opinion of those who place the proximate cause of epilepsy in diseased structure of the parts within the cranium, it has been objected, that in many cases, on examination after death of persons who have been affected with the complaint, no marks of disorganization whatever, after the most minute and careful investigation, could be found. It does not, however, hence follow, that no such derangement of organization exists. The structure of the various parts within the cranium is so exquisite, and the particular uses or functions of them so entirely unknown to us in health, that derangements of the greatest importance may exist in them without the possibility of our being able to discover them.

To the opinion that epilepsy immediately depends upon derangements of the structure

of the brain, as above mentioned, it has also been objected, that much of that organ may be destroyed, without producing any symptoms of the disease ; but this does not appear to me to be an insuperable objection, for I believe that the facts on which it depends relate only to the destruction of parts of the *cerebrum*, and it seems highly probable that the organized parts immediately connected with sensation and motion are placed in the lower region of the cranium. This opinion is confirmed by some experiments made by Sauvage, and by the observations of Wenzel, already particularly detailed. Sauvage observes, that if the denuded brain of an animal be perforated with a sharp instrument, no sensation will be occasioned ; but if the instrument reach the origin of the nerves, or medulla oblongata, an epileptic paroxysm will be produced. Now the parts pointed out by M. Wenzel as the principal seats of organic derangement in epilepsy, and those by the injury of which Sauvage was able to induce the disease, very well correspond. The experiments of the last-mentioned author seem



to confirm the extraordinary observations of the first.

If, however, we could prove, that in very many or even in all cases of epilepsy, these derangements of organization had taken place, it is extremely difficult for us to understand how such derangements could produce some of the symptoms of the disease. — That sensation and motion should thus be abolished we may conceive; but how are we thus to explain the increase of motion which takes place in epilepsy? — The theory above mentioned of Boerhaave and Van Swieten, or the notion of a spasmodic increased action of the parts necessary to motion, would perhaps afford a better rationale of this phenomenon.

Notwithstanding the pains which many ingenious physiologists have taken in endeavouring to understand this subject, it still remains very obscure; and perhaps we must in candour admit the truth of what has been said by the learned author of a dissertation on epilepsy, who, speaking of its proximate cause, observes, “*Est quasi terra incognita, in qua quisque pro volun-*

tate sua vagatur, et viam diligit jam factam, aut facit. Auctores de hac re multas plausibiles et populares fabulas effinxerunt; hæc vero omnia novimus esse nihil.”\*

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\* Dr. Brown, De Epilepsiâ.

## CHAP. IV.

*Diagnosis and Prognosis.*

THE diagnosis of epilepsy is very clear. We are in no danger of confounding it with any other disease, unless it be hysteria, from which it may be distinguished by the foaming at the mouth, the gnashing of the teeth, the blackness of the countenance, and the terrific symptoms above detailed in its history, together with the speedy termination of the fit in sleep, and the absence of the usual symptoms of hysteria; such as the globus hystericus, the palpitation of the heart, the involuntary laughing or weeping, and the other symptoms generally described in the histories of that disease.

With respect to *prognosis* in epilepsy, it may be observed, that in the cases where there is reason to suppose that the disease depends upon the compressing causes above, at large described, such as tumours



effusions, &c. acting mechanically and permanently on the brain, the case may be considered as almost hopeless. Boerhaave, Van Swieten, and several writers, as I before mentioned, have asserted that hereditary epilepsy is absolutely incurable. Hippocrates, however, says, that it is not less curable than other diseases if not of very long standing.

In forming the prognosis in epilepsy we must carefully consider the age, sex, constitution, and habits of life of the patient. When it happens very early in life, or a little before the time of puberty, relief is often obtained by the efforts of nature, or by medical treatment. In females this complaint often spontaneously ceases on the appearance of the menses, on marriage, or during pregnancy. Hippocrates remarks, that those who are attacked by epilepsy before the age of puberty experience a change, by which I suppose he means a favourable change, at that time. Where the disease comes on at twenty-five years of age, or later, the patients generally die. \*

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\* Hippocrates, sect. v. aph. 7.

Tissot, however, thinks that when epilepsy occurs after the age of puberty, it is not less curable than before. All writers seem to agree in the opinion that in proportion as the disease is of long standing the hope of relief is small ; and that sympathetic epilepsy is more easily cured than the idiopathic. It is stated in a respectable work \*, that when epilepsy is connate and hereditary, it is rarely cured ; that the sympathetic is more easily removed than the idiopathic ; that those who are attacked soon after birth are seldom cured ; that those who become epileptic from three or four years up to ten, get well if the disease be attended to in time ; that marriage is a cure for the genital epilepsy, but augments that arising from other causes ; and that epilepsy, combined with alienation of mind, is *never cured*.

Upon the whole, the younger the subject of the disease, the less frequent and less violent the attacks, the more obvious and removable the exciting cause ; as worms,

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\* Dictionnaire des Sciences Medicales.

irritation of all kinds in the stomach and bowels, &c.; and the shorter the time to which the patient has been subject to the disorder, the greater the probability of its removal. On the contrary, when the disease is hereditary or of long standing, when the attacks are frequent and violent, when the strength is much diminished, and the powers of the mind have become impaired, and, above all, when the complaint appears to depend upon some cause acting mechanically upon the brain, and in proportion as these concur, the more desperate must the situation of the patient be considered.



## CHAP. V.

*Treatment of Epilepsy.*

EPILEPSY, as I have already observed, is sometimes attended with symptoms so extraordinary as to have led to the belief of its connexion with supernatural influence; and some parts of the treatment recommended for its cure, especially in former times, as I shall take occasion to point out, have been not less wild than the notions which were entertained respecting its nature and causes.

In giving an account of the method of cure in epilepsy, I shall first speak of the treatment of the idiopathic disease, and afterwards describe the mode of proceeding in the symptomatic.

This disorder, like apoplexy, sometimes makes it attack suddenly, sometimes we are warned of its approach by certain symptoms, such as vertigo, throbbing in the vessels of the head and neck, confusion

of intellect, &c. ; and when these, or any of them, have made their appearance in a strong person of a full habit, subject to epilepsy, we ought immediately to employ the means of speedy depletion. These have been already very particularly described in my account of apoplexy, and will hereafter be noticed in speaking of the treatment of plethoric epilepsy ; I shall therefore content myself with a very brief mention of them here. Depletion may most quickly and most effectually be made by blood-letting and purging. Where symptoms are very urgent, especially in a vigorous constitution, in early or middle life, blood may be taken away both generally and topically, and in considerable quantity. In some instances, arteriotomy, or the opening of the jugular veins, have been recommended ; but I never saw a case of impending epilepsy, in which such strong measures seemed advisable. In advanced age, or debilitated habits, evacuation of blood must be made with great caution. Under such circumstances, the application of leeches, or cupping-glasses, may be sufficient.

Depletion also by purging has been advised ; and the cathartics of the most speedy operation are to be preferred. Stimulating clysters will be found useful, where marks of great determination to the head are evident. — A disposition to an epileptic fit is sometimes manifested, particularly in children, by a disordered state of the stomach and bowels ; and in these cases, purgatives are more especially indicated.

With a view to prevent an epileptic fit, some practitioners have ventured to administer emetics. Aretæus in vertigo recommends this practice, and a modern writer \* says, “ when an attack of epilepsy can be foreseen, no medicine, under such circumstances, will be more likely to prevent a fit than an emetic, given about an hour before its approach.” Notwithstanding these recommendations, I would not venture to employ this remedy, as in plethoric habits the paroxysm might, I think, rather be promoted and aggravated than obviated or retarded by it.

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\* Dr. Thompson's Practice of Physic, p. 344.



Some have recommended opium under these circumstances. We are told, that “as soon as the symptoms, which generally precede the epileptic paroxysm, make their appearance, the patient, if an adult, should swallow from thirty to forty drops of laudanum, in a draught of camphorated emulsion, the common effect of which is found to be the complete prevention of the paroxysm, and the restoration of the patient to his usual health. When the medicine fails in entirely preventing the accession of the fit, its violence and duration are uniformly mitigated by it.” \* Of this practice I have had no experience.

In the history of epilepsy, I have described a symptom often preceding the disease, which has been called *aura epileptica*. When this arises from parts at a distance from the head, its progress may be sometimes stopped, and the paroxysm prevented by pressure in various ways, particularly by ligature. This fact was known to the ancients, and the practice is recom-

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\* Fraser on Epilepsy, p. 62.

mended by Galen as a preventive of epileptic fits, and by Aretæus, as useful in vertigo. In the case of a boy, in whom the aura arose from the leg, Galen says, the physicians who had met in consultation made a ligature upon the limb above the part attacked, by which the paroxysm, which used to come on daily, was prevented. \*

“ If the sensation of a cold air, or if something creeping towards the head be felt, physicians have attempted, by a strong ligature immediately applied, to hinder the ascent of this blast or creeping sensation ; and thus the paroxysm has been frequently obviated.” † “ A ligature upon the limb, above the part from which the aura arises, should always in those cases be applied, both because the prevention of a fit breaks the habit of the disease, and because the frequent compression renders the nerves less fit to propagate the aura.” ‡ An instance of the efficacy of this practice is

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\* Ἐν τῷ μεταξύ δῆσαντες τὸν κῶλον ἀνωτέρῳ τῇ πρὸ πᾶ-  
 δοῦντος μορίου. *Galen de Loc. Aff.* lib. iii. c. ii.

† Van Swieten, § 1084.

‡ Cullen, 1318.

mentioned in the Medical and Physical Journal, in which pressure was made by the application of the tourniquet ; and another by Dr. Thompson, in his Practice of Medicine, from Loeffler, a professor at Altona. In this last case, where the epileptic patient felt in the attack a sense of coldness at the sole of the foot, gradually ascending till it reached the head, a strong ligature was made above the knee of the affected limb, before the cold sensation had proceeded so high ; and as often as this precaution was taken sufficiently early, the attack was prevented. Many similar cases might be adduced from authors ; these may be sufficient at present, as the subject will be resumed when I treat of the radical cure of the disease, by the removal of the exciting causes. — These means may be employed with the view of preventing the epileptic fit.

In the actual paroxysm, advantage may be derived from an attention to the following directions. — The patient should, as soon as possible, be placed on a bed or sofa ; the head should be somewhat raised, and such parts of the dress removed



as may press upon the vessels of the neck. The convulsive action, when violent, should be restrained ; and every other precaution should be taken, to prevent injury to the patient and those around him. — It often happens, that the tongue is lacerated by the spasmodic action of the muscles of the jaws ; in order to guard against this mischief, a piece of cork, or other soft wood, or a napkin or handkerchief properly rolled up, should be introduced between the teeth. \* — Some persons are of opinion, that

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\* Dr. Mosman of Bradford, in Yorkshire, in a letter to Dr. Duncan, gives him an account of a remarkable case, in which epileptic fits were arrested, by extending the jaws, and keeping the teeth asunder. “ During the continuance of a fit,” says Dr. Mosman, “ the patient had bit his tongue most severely ; and with a view to prevent a similar accident, I had a piece of wood prepared, to fix between his teeth on the accession of another fit. I had soon occasion to have recourse to it ; but I found that the introduction of it was attended with much difficulty. I therefore, with my fingers, forcibly opened his mouth, to keep his jaws extended during the operation of the convulsions. The effect of this was instantaneous. The fit was over in a moment. I was not prepared to expect any solution of the disease from this experiment, which I soon had occasion to repeat. During the whole of the day, the fits kept recurring, and were as constantly

when the hands are powerfully clenched, the thumb and fingers should be forcibly straightened ; but I see no probability of advantage from such a practice : on the contrary, if much force were to be employed, I think it might be prejudicial.

In addition to these means, some physicians, especially in former times, have recommended a variety of external applications, and internal medicines, with a view of shortening the paroxysm, and mitigating the violence of its symptoms.

Several of the ancients were of opinion, that an epileptic fit is an effort of nature to throw off peccant humours, and that this effort should be encouraged and assisted by friction, sternutatories, emetics, and stimulating applications of various kinds, made to the nose and temples, to the whole head, and to the extremities ; but Celsus reprobates the employment of

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terminated by extending the jaws, and keeping the teeth asunder ; a female servant having employed, when occasion required, the same certain means of prevention."

such means \*, and indeed the practice appears to be not only useless, but mischievous.

Some have advised bleeding in the fit, on the supposition that the brain is overloaded with blood, and that, by lessening partial plethora, relief might be obtained. In a case of epilepsy arising from a suppression of the menses, we are told, that Hoffman produced much mitigation of symptoms by bleeding in the foot during the paroxysm ; but that this treatment did not prevent a return of the fit on the following day. To say nothing, however, of the great inconvenience of the abstraction of blood under strong general convulsive muscular action, I doubt whether any mitigation of symptoms would, in general, be thus obtained ; more especially as we are informed, from high authority †, that spontaneous bleeding from the nose has occurred in attacks of this kind, without apparent relief. Bleeding during the paroxysm is

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\* Quidam hos quoque üsdem, quibus lethargicos excitare conantur ; quod admodum supervacuum est.

† Tissot.



calculated, says an accurate observer, to lessen the strength of the patient, but not the power of the disease. \*

After attention to a proper position of the body, to the removal of ligatures, and to the means of preventing injury to the patient, or others, by the involuntary convulsive muscular actions, every thing further during the fit, such as the application of acrid or volatile stimulants to the mouth or nose, frictions, &c. are, I believe, useless, if not dangerous. — In many, indeed in the generality of cases, the symptoms of this disorder are mild, and scarcely any thing need be done to mitigate them. On recovery from the fits, if the patient be disposed to sleep, it may be encouraged; and if, when he awakes, he complains of languor or faintness, mild cordials may be administered.

For the radical cure of epilepsy, we trust to means to be employed in its intervals. Before I enter on a consideration of these means, I wish to observe that, in this dis-

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\* Heberden.

order, it is of consequence that the epileptic habit, if it may be so called, should be broken, by avoiding every thing associated with the complaint, or that might bring the thoughts of it to the mind of the patient. As the traces of ideas which are not from time to time renewed, says a French writer, gradually become entirely effaced, so the epileptic aptitude may be destroyed.\* We find this sentiment also in Galen, in his *Consilium pro Puero Epileptico*, and in Cullen's *Practice of Physic*. "As the disease, in many cases, is continued by the power of habit only, and as, in all cases, habit has a great share in increasing mobility, and therefore in continuing the disease, so the breaking such habits, and changing the whole habits of the system, is likely to be a powerful remedy in epilepsy."†

The predisposition to epilepsy is sometimes hereditary; in which cases it is particularly difficult to cure. Indeed some authors consider the disease, under these

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\* Tissot.

† Cullen, p. 397.

circumstances, to be absolutely incurable. Boerhaave and Van Swieten speak very confidently upon the subject. The former says positively, that hereditary epilepsy is never cured; and the latter observes, that it has been reckoned incurable by all physicians, and that perhaps it is not more in our power to remove this latent impression, communicated by parents to their offspring, than to prevent the teeth or beard from growing. And again, hence it appears impossible for the physician to remove the morbid impression, and in this sense an hereditary epilepsy is reckoned incurable.\* This doctrine, I believe, is not true; and indeed Van Swieten admits that circumstances may prevent the occasional causes from rousing the latent predisposition. At any rate, it is mischievous, inasmuch as it discourages the exertions of the physician.

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\* Inde intelligitur quæ hereditaria cur ea nunquam sanabilis. *Boerh. Aphor.* 1078.

Hinc videtur impossibile esse medico, ut characterem illum morbosum; a parentibus in progeniem derivatum, auferat; et hoc sensu insanabilis dicitur epilepsia hereditaria. *Van Swieten, Comm. in Aph.*



In attempting the cure of idiopathic epilepsy, the indications are, in the intervals of the fits, to correct, if possible, the predisposition to their return, and to remove or diminish the power of the exciting causes. In endeavouring to fulfil the first of these indications, we find much difficulty, as we know not what the immediate nature of epilepsy is, or in what the predisposition to it consists. Authors have thrown very little, if any light upon this subject. Tissot says, we must endeavour to change the epileptic disposition of the brain ; but he cannot, or at least he does not, inform us what that is. Dr. Cullen, as before mentioned, thinks that the predisposition to this disorder is a certain mobility of the sensorium, depending upon a plethoric state of the system, or upon debility.

It is not easy for us to understand how states so opposite should exhibit the same symptoms ; yet we know that epilepsy is sometimes connected with plethora, and sometimes with debility, and that the complaint has been diminished in violence, or has even been cured, by such modes of treatment as are calculated to diminish or

to remove these opposite states. As I have already pointed out very particularly the symptoms which characterise plethora, both general and topical, and those which distinguish debility, I shall now immediately proceed to the consideration of the different means to be employed under these different circumstances.

The treatment which the most experienced physicians have recommended, with a view to diminish or remove plethora, general or partial, are depletion by blood-letting and purging; emetics, blisters, setons, and issues; the restoration of discharges that may have ceased, or been artificially stopped, and by proper diet and exercise.

The most powerful and the most speedy depletion, as I have already had occasion to observe, is produced by blood-letting and purging; and in all cases of epilepsy connected with plethora, I believe these to be the most efficient remedies. In favour of this practice, under the circumstances alluded to, the opinions of the most eminent physicians might be adduced. It is recommended by the ancients, parti-

cularly by Aretæus; and among the moderns by Boerhaave, Van Swieten, Tissot, Cullen, Fothergill, and many others.

When the disease seizes\* the head, Aretæus says every thing ought to be done as in cephalæa: the veins in the elbow, and the frontal vein, are to be cut, and cupping-glasses are to be applied, but not so as to induce deliquium animi; all the arteries, both before and behind the ears, should be opened. Several of the Greek writers agree with Aretæus in recommending blood-letting, both general and topical, in epilepsy: they seem to have thought the practice useful in all epilepsies, without attending to the distinctions which have been made by the moderns.

Tissot was a most strenuous advocate for depletion by bleeding in this disorder. The disposition to plethora in epilepsy, is sometimes, he says, so strong, that in spite of the greatest temperance, and the most careful choice of aliments, too great a quantity

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\* Perhaps Aretæus means to say, when the cause is in the head.



of blood is formed, the vessels become full, and the pulse often hard. In such cases we ought not to hesitate to let blood from the arm, and to repeat the evacuation as often as circumstances require. Tissot took great pains in considering the objections which have been made to blood-letting in diseases of the nerves, and he convinced himself by numerous experiments, that this evacuation is very useful in epilepsy ; that we have no means more powerful in obviating the paroxysm ; that the malady is often incurable without bleeding ; and sometimes is removed by bleeding alone ; and that even when this evacuation does not immediately prove useful, it is indispensable, in order to facilitate the effect of other remedies. In support of his doctrine upon this subject, Tissot quotes several cases from Rhodius, Riverius, Severinus, Zacutus Lusitanus, Pechlin, and others. To these many more might be added, from the later systematic writers, and from the medical journals.

In some instances, the sudden accidental loss of a large quantity of blood ; in others, frequently repeated and copious bleedings,

on account of inflammatory diseases which may have accompanied epilepsy, have completely removed it. A case of the former kind is related by Dr. Hamilton of Ipswich, and of the latter by Riverius.

My friend Mr. Earle has been kind enough to favour me with the following cases, in which pressure on the carotid arteries, and very free bleeding, were found to be decidedly useful. I must remark, however, that the symptoms of the first case described by Mr. Earle, appear to me rather to indicate an apoplectic than an epileptic seizure. A young gentleman, aged sixteen, was subject to epileptic fits, accompanied with most alarming determination of blood to the head. He dated these paroxysms from a fall which he had into the hold of a ship in China, where he subsequently suffered from a bad fever. The fits usually occurred before he rose in the morning; but he was frequently liable to them during the day. At the time when I first saw him, they were increasing so much in frequency, that he was never certain of passing a day without a seizure. He was constantly afflicted with severe head-aches, was very drowsy, and his memory was very defective.

I was first called to him during one of the most severe attacks he had ever experienced. I found him perfectly insensible, with stertorous breathing, and his eyes and whole countenance evincing great determination to the head. He had passed his urine and fæces involuntarily. I immediately bled him from the arm and jugular vein; but he did not evince any signs of returning sensibility until I had taken between forty and fifty ounces of blood. He remained in a state of stupor for some time, and experienced much numbness in his right arm and leg, which did not wholly subside for several days. I recommended a strict vegetable diet, and purged him freely, which kept off the attacks for some time. During the winter I was twice called to him, in nearly the same state as I have above described; each time the fit came on early in the morning, and required the same active measures to be pursued. From observing the very powerful action of the carotid arteries, I was induced, in one of his attacks, to try the effect of compressing those vessels, which appeared much to shorten the duration of the fit. I



explained to him and his friends the exact situation of the vessels, and shewed him how to compress them, being anxious that he should make a trial of pressure, on the least threatening of a paroxysm, of the approach of which he was generally sensible from the rushing noise in his ears, and an indescribable dread which took possession of his mind. It was not long before an opportunity offered of making the experiment, and he was confident that he postponed the attack. Very frequently after this, he succeeded in arresting the approaching fits ; but he was still occasionally liable to them early in the morning, on first waking.

“ From observing such beneficial results from the employment of occasional pressure, I was induced to consider the propriety of applying a ligature round one or both the carotids, with a view to permanently diminish the determination of blood to the head. It appeared to me probable, as the vessels which supply the head pass through bony channels, which are not liable to vary in their calibre, that the collateral circulation would not be so liable to become increased after the application of

a ligature to one of the trunks, as it would be in any other part of the body. The interesting facts on record of the cure of aneurism from anastomosis of the orbit, by tying the common carotid, appeared to sanction such a conclusion. \* — The patient and his father were so fully convinced of the temporary benefit which he derived from pressure, that they were very urgent with me to attempt a more permanent cure. The very rigid diet and active treatment, combined with the occasional application of leeches or cupping-glasses, which had been persevered in, had, however, so ameliorated the frequency and intensity of the complaint, that I hesitated in attempting so serious an operation, unless it had been more imperiously called for. By steady perseverance in the strictest anti-phlogistic treatment, he gradually got the better of the disposition to plethora; and for some years he has not experienced any return, although he now inhabits a tropical climate. — I have known, however, one

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\* Med. Chir. Soc. vol. ii. p. 1. Hodgson on Dis. of Art. pp. 449—453.

other instance of epilepsy, in which pressure on the carotids seldom failed to arrest the fit.

“ A short time since I witnessed a singular result from the local abstraction of blood, in a case of epilepsy of long standing. A lady, between thirty and forty, had been subject to fits from her infancy, for which she had been treated with strong stimulating nervous medicines, and very full diet. She generally experienced a succession of fits, to the extent of six or eight ; and the attacks were always preceded and followed by severe head-aches, and much convulsive twitching. I found her just coming out of a second fit, and quite insensible ; her countenance was crimson, and her eyes quite feretty. The determination to the head was so very marked, that I immediately recommended cupping from behind the ear, which was performed to the extent of sixteen ounces. She speedily became sensible, and had no return of fits ; but instead of falling into a profound sleep, which was the usual consequence of an epileptic paroxysm, she became extremely talkative, and her imagination was so unusually active, that she soon be-



gan to speak as if conversing with persons who were not present. By reasoning with her, she was made sensible that she was talking incoherently; but soon relapsed again. I was called to visit her in this state, and by giving her a powerful dose of camphor and opium, she very soon became composed, and fell into a quiet sleep, from which she awoke perfectly well and free from head-ache. The effect of the sudden abstraction of blood from a surcharged brain in this case was very curious, and might lead to much speculation; but as facts are rather desired than theories, I give you the simple narrative."

"Out of five dissections I have made of the brains of epileptic patients, I found two with tumours in the cerebellum and cerebrum, and three with ossific productions from the basis cranii, which had induced chronic disease in the contiguous membrane and substance of the brain. I have just received an account of a dissection, in which part of the sphenoid and œthmoid bones were in a carious state."

Some eminent physicians, among whom we may mention Dr. Heber-

den \*, positively forbid bleeding in epilepsy ; and Dr. Cullen, who is an advocate for the practice, generally, thinks, that in some cases it is not advisable. “ It might be supposed,” he says, “ that blood-letting would be the most effectual means of correcting the plethoric state of the system, — and such it certainly proves, when the plethora has become considerable, and immediately threatens morbid effects. It is, therefore, in such circumstances, proper and necessary ; but as we have said above, that blood-letting is not the proper means of obviating a recurrence of the plethoric state, and, on the contrary, is often the means of favouring it, so it is not a remedy advisable in every circumstance of epilepsy. There is, however, a case of epilepsy, in which there is a periodical or occasional recurrence of the fulness and turgescence of the sanguiferous system, giving occasion to a recurrence of the disease. In such cases, when the means of preventing

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\* Heberden, 146. Vomitus quoque et detractio sanguinis nocent.

plethora have been neglected, or may have proved ineffectual, it is absolutely necessary for the practitioner to watch the returns of these turgescences, and to obviate their effects by the only certain means of doing it, that is, by a large blood-letting.” \*

The advocates for bleeding in epilepsy also very generally recommend purging, with a view of removing plethora, and of freeing the stomach and bowels from acrid substances. Hippocrates, Galen, Aretæus, and some other Greek physicians, lay great stress on aperient medicines for the cure of epilepsy. Aretæus recommends hellebore, hiera, and other drastic purgatives. Alexander Trallianus says, that he has often cured epilepsies by cathartics only. He was particularly partial to the employment of aloes, colocynth, and scammony. In the treatment of this disease the Greek physicians seem very much to have trusted to external remedies, and to the means of diminishing plethora by blood-letting and purging, aided by proper diet and exercise.

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\* Cullen, vol. iii. p. 385.



Hippocrates thought that the disease might thus be removed, without the employment of expiations, incantations, or any such nonsense.\* Celsus was also an advocate for purging in epilepsy.†

An experienced modern physician ‡ thinks, “that where epilepsy appears in children, as is often the case, we ought, on the first attack, arising from an uncertain cause, to set on foot the most decided and active course of purgatives, and not to allow the disease to strike root, while we are idly employed in the exhibition of inert and useless vermifuge medicines.”

A late eminent practitioner, however, was of opinion, that except in cases of worms in children, or affections of the intestines from other causes, it is improper to purge in epilepsy §: and the generality

\* "Ἀνὲ καθαρμῶν, καὶ μαγευμάτων καὶ πάσης ἄλλης βαναυσίης τοιαύτης. *De Morbo. Sacro.*

† Necessarium autem est, ducere alvum, vel nigro veratro purgare vel utrumque facere, si vires patiuntur.

*Celsus*, lib. iii. cap. xxiii.

‡ Hamilton, *Observations*, p. 60.

§ Alios epilepticos purgare alienum est. *Heberden*, p. 144.

of writers seem to think, that there is never any necessity for the employment of drastic purgatives in this disease; but that the keeping the bowels gently open will be sufficient. Perhaps in strongly marked plethoric epilepsy, powerful cathartics may be administered, not only with impunity, but with advantage; but, under other circumstances, I would not venture to employ them.

The exhibition of emetics for the cure, as well as the prevention of epilepsy, has been recommended by Aretæus, and some modern physicians; but in such cases as are at present under our consideration, I should be afraid to adopt this practice.

A discharge from the neighbourhood of the head, kept up for a considerable time, seems, in some instances, by diminishing plethora, to have prevented the return of epileptic paroxysms. Aretæus and Celsus think, that whatever is calculated to evacuate noxious humours from the head, is likely to be useful in these cases. Celsus recommends cupping-glasses, and the actual cautery to the back part of the

head.\* Van Swieten highly approves of the application of blisters, issues, and setons in this view ; and he relates the case of a young woman, who, in the paroxysm, having fallen into the fire and burnt her face and forehead terribly, so that a great discharge was occasioned from those parts, remained free from the disease as long as the discharge continued, but relapsed when it ceased.

A variety of cases might be quoted in favour of the practice above mentioned, from Fabricius, Willis, and others. “ Considering the nature,” says a practical writer, “ of the matter poured out by issues, these may be supposed to be a constant means of obviating the plethoric state of the system ; and it is, perhaps, therefore, that they have been so often found useful in epilepsy. Possibly, also, as an open issue may be a means of determining occasional turgescences to such places, and therefore of diverting them in some measure from their action upon the brain, so also in this

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\* Ut per ea perniciosus humor evadet. *Celsus*, lib. iii. cap. xxiv.



manner, issues may be useful in epilepsy.” \*  
As these means do not seem capable of doing mischief, and as they may tend to diminish a plethoric state of the system, I venture to recommend them in the kind of epilepsy of which I am treating.

A restoration of discharges to which the habit has been accustomed, especially where the disease has followed the suppression of them, should, by all means, be attempted. Where the menstrual, or hæmorrhoidal discharges have suddenly ceased, and epilepsy has been thus produced or aggravated, it is of the greatest consequence that such evacuations should, if possible, be re-established by general or topical blood-letting, pediluvium, and other means pointed out by authors. Some French physicians with this view advise the application of leeches to the neighbourhood of the anus. M. de Maisonneuve has related several cases, in which epilepsy was produced by a suppression of the menstrual discharge, and cured by the restoration of it. In one instance,

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\* Cullen, vol. iii. p. 383.

after deficient and irregular menstruation, the disease came on in consequence of a sudden fright, and the paroxysms were frequent and strong. They always ceased, however, for a short time, on the appearance of the menses, though deficient in quantity. Emmenagogues, and antispasmodic medicines were administered without advantage ; but on taking away blood frequently, the catamenia became regular and abundant, and the patient was restored to perfect health. In another instance, in which the menses had been suppressed, epileptic fits supervened ; and continued for a long time to return monthly, the suppression not having been removed. M. de Maisonneuve mentions one case of epilepsy, arising from the above-mentioned cause, in which the paroxysms continued to return, though the suppression had been removed.\*

Where, in infants liable to epilepsy, a fetid ichor is discharged from the head, or other parts, as sometimes is the case, it

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\* De Maisonneuve, page 247 — 264.

should be promoted as much as possible ; or, if it have ceased, it should be again produced, by frequent washing those parts with warm water, or gently stimulating lotions. In these cases, warm plaisters, with a small quantity of cantharides, have been found useful.

In plethoric epilepsy, it is of the utmost consequence that a proper diet and regimen, in every respect, should be observed. Too great a quantity of nourishment, or too much sleep, are very prejudicial. Animal food, or whatever is calculated to make much blood, should be avoided, or taken but in small quantity.

Dr. Prichard is a strenuous advocate for the employment of purgatives in epilepsy and other nervous diseases. In the eleventh volume of the *Edinburgh Medical and Surgical Journal*, he gives an account of three cases of epilepsy, although unattended with symptoms of plethora, in which cathartics were administered with great advantage. — The first case was that of a boy, about fifteen years of age, of a slender make, who was seized with a fit, preceded by a convulsive motion in one



of his hands, which presently rose along the arm to his head, when he fell down senseless ; all his limbs were convulsed, and he foamed at the mouth. On the following day he had another fit, in every respect similar.

For this patient a powder was prescribed, consisting of twelve grains of jalap, two of submuriate of mercury, and one drop of oil of cloves, to be taken every second day. Having taken this medicine two or three times, the quantity of jalap was increased to sixteen grains. The powder was taken for about ten days, during which time he had no fit or previous symptoms, and was well in every respect. On pursuing this plan he perfectly recovered, although he had one fit several months after he began to take the medicines. In the two other cases, powerful cathartics were administered, which probably contributed much to the cure of them ; but other remedies were also prescribed.

In the case of a woman, who, in consequence of a fright, had been subject to frequent attacks of fits, in which she lost sensation and consciousness, without being

convulsed, a powder, consisting of jalap, rhubarb, and calomel, was given every second night with complete success. She continued the powder regularly for three weeks, at the end of which time she became quite well, and she afterwards had no return of the complaint. — Dr. Prichard treated a considerable number of epileptic cases on the above mentioned plan ; but he candidly acknowledges, that his success with respect to them was not complete: very few, however, occurred which were not more or less relieved by the use of evacuants, particularly by active purgatives, with local bleeding and the use of blisters. Dr. Prichard considers the introduction of the free use of evacuant remedies into the treatment of nervous diseases, as one of the greatest improvements of the medical art which has taken place of late years.

“ The plethoric state of the system is to be corrected,” says a celebrated author, “ chiefly by a proper management of exercise and diet ; and, with respect to the latter, it is particularly to be observed here, that an abstemious course has been frequently found to be the most certain means of

curing epilepsy.”\* — Dr. Abercrombie is of opinion, that the only remedies of real efficacy in these cases, are purgatives and strictly vegetable diet, with total abstinence from strong liquors. When the disease has not yielded to this mode of treatment, Dr. Abercrombie informs me, that he has not found it yield to any remedies. In confirmation of his opinion on this subject, he has favoured me with an account of the case of a gentleman, who was in a state approaching to idiotism, and subject to very frequent and violent epileptic paroxysms, who, in the course of a few months recovered perfectly, and enjoyed good health for several years, simply by frequent purging, a strict adherence to a vegetable diet, and by frequent washing of the head with cold water.

In addition to a proper regimen, with a view of moderating or curing plethoric epilepsy, Tissot recommends the greatest attention to the state of perspiration, which is often irregular ; the skin, he says, being

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\* Cullen, vol. iii. p. 383.



affected with spasm ; under these circumstances, he speaks highly of the use of the warm bath. It is difficult to appreciate, he says, the beneficial power of this remedy without having tried it. It is generally ordered, he observes, only for a short time, but we ought to persevere in the employment of it for a long, nay, an unlimited time, to reap the full advantage of it. He thinks, however, that whenever there is a disposition to a too great determination of blood to the head, warm bathing ought not to be tried. — With respect to the means of preventing or diminishing plethora, especially by diet and regimen, much valuable information may be obtained from this author.\*

When the predisposition to epilepsy, or the actual disease, seem to depend upon debility, a plan, in several respects different from that above mentioned, should be adopted. In these cases, depletion by free blood-letting, or drastic purging, would prove injurious. The bowels, however,

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\* Tissot, page 270.

should be kept gently open, and if symptoms of fulness in the vessels of the head should appear, notwithstanding the debility, topical bleeding may, in moderation, be employed.

In this kind of epilepsy, *tonics* and *antispasmodics* have been very generally recommended, of which we have a great variety. Among these may be reckoned cold, in a moderate degree, exercise in the open air, and nutritious diet; or at least these may be considered as powerful assistants to tonic medicines. The Greek physicians, as I have before mentioned, seem chiefly to have trusted to local means, and to those which are calculated to diminish plethora. Galen, however, had confidence in certain medicines, particularly theriaca Andromachi\*, simple oxymel, and oxymel of squills. Aretæus had some faith in a variety of what he calls hot, dry, and attenuating remedies. He was in the habit

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\* He says Ταῖς ἐπιλήψιας δὲ αὐταῖς ἀγωνισικῶς εἰώθε-  
βοηθεῖν. Gal. de theriac. ad Pisonem.

of giving cinnamon, cassia, pepper, and castor, together with theriaca and mithridate, and some diuretics ; but he placed his chief confidence in applications to the head, with bleeding and purging.

Some of the antients have recommended the cold bath\* ; and a celebrated modern physician † speaks in very high terms of its use, in this and several other nervous disorders, provided the vessels be not overloaded with blood, or the patient affected with extreme sensibility, and irritability of constitution, or of inveterate obstruction of any kind. Except in such cases, cold water is, without contradiction, he thinks, one of the remedies best calculated to give strength to the nervous system, and to correct a disposition to convulsion from slight causes.

When the predisposition to this disease is owing to a state of debility, we are, says a practical writer, to obviate and prevent its effects by recommending the patient to breathe a cool air ; to make use of a ge-

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Coelius Aurelianus, in particular.

† Tissot.



nerous nutritious diet ; to take daily exercise adapted to his strength, particularly on horseback ; and to go frequently into a cold bath.\* Notwithstanding these opinions, I would not venture to advise the cold bath, even in epilepsy connected with debility, if any appearance of fulness of the vessels of the head were observable.

Dr. Cullen considers fear, or some degree of terror, as capable of being useful in epilepsy. He refers to a remarkable cure of the disease by Boerhaave, in the Orphan House, at Haarlem ; and he states that he has himself met with several similar instances of its good effects ; and in the 18th volume of the Medical and Physical Journal, we have an account of the disappearance of epilepsy on occasion of a sudden fright. A lady in the prime of life, of robust habit, was for four years afflicted with this complaint in a violent degree, the paroxysms returning three or four times a week, continuing for some hours, and leaving the patient in a state of stupor. “ A

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\* Thompson, p. 345.

variety of medicines had been tried in vain, and the case was considered hopeless, when, on receiving a dreadful mental shock, by the circumstance of her daughter being accidentally burnt to death, the disease entirely and finally left her ;” and a case is related by Haller, in which a cure of epilepsy was effected by the apprehension of the performance of the operation of trepanning, and the sight of the apparatus for that purpose. Such remedies, however, appear to me to be of doubtful use, as they are not sufficiently under our controul ; and I should be afraid to employ them.

The chief *tonic medicines* recommended are vegetable astringents, and certain metallic preparations. Among the former, *bark* and *bitters* have been prescribed with peculiar advantage. De Haen speaks highly of the use of these remedies ; and Dr. Home, in his clinical experiments, mentions the case of a man who, after a fright, had been for eight years subject to epileptic fits, and fatuous for near two years, who, on taking the bark for almost a month, was so much benefited, that his fits be-

came very slight, and recurred but seldom.\* It has been remarked, that the bark seems best adapted to those epilepsies which recur at certain periods, and which are without plethora, when, if it be given in considerable quantity, some little time before the expected recurrence, it will be very likely to prove serviceable.† M. Tissot has employed the bark with great success in many cases, and in two of them he attributes the cure entirely to this medicine. In both, the recurrence of the paroxysm was periodically exact.‡ He thinks, however, that though very useful, under peculiar circumstances, it has no decided anti-epileptic virtue; and he supports this opinion by reference to a great number of writers. Dr. Cullen speaks somewhat favourably of the administration of bark in epilepsy, under certain circumstances. The vegetable tonic, he says, “which from its use in analogous cases, is the most promising, is the Peruvian bark;

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\* Home, clinical experiments, p. 207.

† Thompson, practice, 346.

‡ Tissot, p. 336.



this, upon occasion, has been useful, but has also often failed. It is especially adapted to those epilepsies which recur at certain periods, and which are, at the same time, without a recurrence of any plethoric state, or turgescence of the blood; and in such periodical cases, if the bark is employed some time before the expected recurrence, it may be useful; but it must be given in large quantity, and as near to the time of the expected return as possible.”\*

Some physicians, upon the continent, seem to have entertained a very high opinion of the efficacy of the *leaves of the orange-tree* as an anti-epileptic. An empiric at the Hague is said to have given this medicine as a nostrum, with so much advantage in epilepsy, as to have induced some respectable practitioners in that town to try it, and they made so favourable a report of it, that De Haen prescribed it in the case of a girl affected with

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\* Cullen, p. 389, 390.

frightful convulsions, with perfect success. After this the orange leaves were given, we are informed, in the hospitals of Vienna, in powder and infusion, with evident advantage. M. Locker administered this medicine in the hospital of St. Mark to a great many epileptic persons, and found it superior, he says, to the most celebrated remedies, all of which he had tried. In some instances it moderated the violence of paroxysms; in others it increased the length of the intervals between the fits; and in some it effected a perfect cure. In Sandiforth's Collection of Theses, we find a dissertation, entitled, *De puero epileptico foliis aurantiorum recentibus servato*; in which the virtue of this remedy is highly extolled. But although highly spoken of by many distinguished persons, Tissot, who tried it in this and other diseases, does not seem to expect much advantage from it; and the experiments which have been made by Home, and others in this country, are not at all in its favour.

“ Bark, and the leaves of the orange-tree, says a modern writer, both of which have been very strongly recommended by many

writers as powerful remedies for epilepsy, are little worth a trial.”\*

A Mons. Dufrenoy, some years ago, published a treatise concerning the use of what he calls the *meadow narcissus*, in a variety of nervous affections, and he relates the case of a person, aged thirty-eight, who had laboured under frequent attacks of epilepsy, who, by taking for a few months the extract of narcissus, was cured of that disease, and also of a nervous blindness, with which it was accompanied. This extract was given in the dose first of four, afterwards six, and lastly increased to forty grains, twice a day.†

Among the vegetable astringents recommended in epilepsy, the viscus quercinus, misletoe, or more properly missel-toe, has held a distinguished place. This medicine was known to the ancients, and has been employed by many modern physicians, especially on the continent; some of whom have entertained a very high opinion of its

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\* Good, vol. iij. p. 545.

† Annals of Medicine, vol. iv. p. 188.



anti-epileptic power. One writer\* thinks that it is as much to be depended upon, as a specific in this disease, as the bark is in intermittent fever. In the case of a lady of distinguished rank, the cure of an hereditary epilepsy was effected, as we are informed, by the viscus quercinus alone, various other remedies having been tried in vain.† Boerhaave, Van Swieten, De Haen, and many other highly respectable writers, seem to have believed that it possesses the virtues attributed to it; and Dr. Frazer, some years ago, published a pamphlet for the express purpose of stating the power of this vegetable astringent in the cure of epilepsy. He gives us a long list of names of medical men, who have tried it with success; and he assures us that he can, from his own observation, strongly recommend it. “My own experience,” he says, “warrants me in declaring, that of eleven cases of epilepsy, which were treated with the viscus quercinus, under my direction, during the years 1802, 1803, and

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\* Colbatch.

† Tissot.

1804, nine were radically cured, one was fatal, and one received no benefit." He states the particulars of these cures at considerable length, for which I refer to his book.\* Dr. Frazer prescribes the missel-toe in powder, in the dose of from two scruples to two drams, twice a day, in a draught of camphorated emulsion. The late Dr. Fothergill, Dr. Gilbert Thompson, and Dr. Willan, we are informed, gave this medicine in epilepsy with success; and "Mr. Haynes of Gloucestershire, witnessed its efficacy in three different cases of the disorder, which had baffled the skill of several eminent practitioners." Dr. Frazer believes himself correct in stating that Mr. Haynes "has never known this remedy to fail in these cases, but that its exhibition has been uniformly attended with success under his direction."†

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\* Frazer on Epilepsy, p. 89.

† It is said that the viscus quercinus is not to be found in England or France, at present. De Candolle thinks it has been extirpated in these countries by the Druids, who used it so much in their religious ceremonies. De Candolle never found the viscum album of botanists on

Notwithstanding these favourable accounts of the anti-epileptic virtue of the viscus quercinus, I should not place any confidence in it alone. Tissot, Cullen, Home, and other modern physicians, have found little advantage from the employment of it, and I never saw it of use in a single instance. Dr. Cullen thinks that when given in large quantities, it may possibly be useful; but he believes it was more especially so in ancient times, when it was an object of superstition. In the few instances in which he had seen it employed, it did not prove of any effect.\* The general opinion seems of late to have been unfavourable to the viscus quercinus, and it is now almost wholly neglected.

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that tree in France and its neighbourhood; and only one instance is on record of its having been found on the oak in England; but it is abundant on apple-trees and many others. On the other hand, the missel-toe of Italy, the loranthus of the botanists, is common on all the different kinds of oak in that country; particularly about Parma. It is this missel-toe that was probably used by the ancients.

\* Cullen, p. 388.



Among the vegetable tonics employed for the cure of epilepsy, says Dr. Good, "the misletoe of the oak stood at one time at the head. It was regarded as a specific by Colbatch, and most warmly recommended by Haller and De Haen. It appears, however, to be of no importance from what tree it is taken, for, as a parasite, it flourishes equally on many, and preserves its own peculiarities on all; and from every tree, as far as late experiments have been made, it is equally inefficacious and futile. Dr. Good adds, it is difficult, indeed, to conceive what property could ever have recommended this plant to therapeutic notice, for its sensible qualities are few and slight, both the leaves and roots having little smell, and only a weak bitterish nauseating taste." \*

Some writers assert that Pliny speaks of the power of the viscus quercinus in epilepsy; but this, I believe, is a mistake. He has described the misletoe, and has pointed out some of the superstitious notions which

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\* Study of Medicine, vol. iii. p. 544.

the Druids entertained respecting it; but I do not find any account in this author of its anti-epileptic virtues. \*

The metallic tonics chiefly recommended in epilepsy are *silver, zinc, copper, lead, arsenic, and mercury*. Among these, silver, in the form of *nitrate of silver*, has been distinguished. It has lately been much prescribed, and with great advantage. The exhibition of this salt, however, is not new. Alston and Gmelin refer to Angelus Sala, a chemical physician, who wrote at the commencement of the seventeenth century; and likewise to Geoffrey, and to Boyle, as recommending its use. †

The experiments that have of late years been made with this preparation of silver, may perhaps be referred to an accident. “A gentleman, aged about forty-six, who had from his infancy been subject to epileptic fits, and who was in the habit of

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\* He says, *foecunditatem eo potu dari cuicunque animali sterili arbitrantur, contraque venena omnia esse remedio*. Plin. hist. nat. lib. xvi. ch. 44.

† Dr. Powell, Med. Trans. vol. iv. p. 86.

introducing a crown-piece between his teeth to prevent the tongue from being bitten, accidentally received it into the œsophagus, whence it was artificially passed into the stomach, being situated so low in the œsophagus that it could not be forced back again. The throat, after this, was inflamed, and very painful for a long time, attended with the utmost difficulty in swallowing. The patient's general health after this was much as usual, but his fits were observed to be not so violent or frequent as before. About nine months after the accident, he brought up the crown-piece with vomiting, but without pain; since which time (nearly a year) he has enjoyed a perfect state of health, and has had no return of the epileptic fits. The crown-piece appeared black, and somewhat corroded round one part of the edge and surface." \*

Since the publication of this case, a great many trials have been made with the nitrate of silver in attempting the cure of epilepsy ;

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\* Medical Transactions, vol. iii. p. 30.



and various accounts of its efficacy have been communicated in the medical journals. — Among the first of those who of late years prescribed this medicine with success, I may mention Dr. Wilson, of Spalding, in Lincolnshire; Dr. Sims, an American physician; and Dr. Cappe, of York. Dr. Wilson, in a letter to Dr. Duncan, published in the *Annals of Medicine*, says, “After having tried the various means which are commonly recommended in epilepsy without producing any good effect, I have lately employed the *argentum nitratum* in doses of two grains and a half three times a day, with the happiest success. I am now giving it to a boy of sixteen in that dose, without producing any other sensible effect than a slight nausea. He has had no return of fits for ten days past, though they formerly occurred two or three times during the day. He took no other medicine whatever combined with the *argentum*, as it was formed into pills with bread-crumbs.” \*

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\* Duncan’s *Annals*, vol. ii. p. 406.

Dr. Sims speaks very highly of this medicine in epilepsy ; and relates the case of a boy of six years of age, who had laboured under the complaint ever since he was eighteen months old, in whom the fits occurred frequently in the night, and generally to the number of four or five, sometimes to the number of sixteen. Various remedies had been unsuccessfully tried for this patient ; but, on the exhibition of the *argentum nitratum*, in the dose of one grain in pills, he soon began to amend, and was quite free from the complaint for a considerable time, when he was seized with the fever of the climate, and died.

Dr. Cappe administered the nitrate of silver in several diseases with great success, and, among the rest, in epilepsy. He describes one case in particular, which is that of a man who, soon after marriage, had been attacked by the disease, and who had suffered from it for more than twenty-five years. In this instance the ordinary means proving inefficacious, the nitrate of silver was successfully administered.\*

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\* *Annals of Medicine*, vol. iii. p. 456.

Many persons have been deterred from the employment of the nitrate of silver on account of its caustic power, and the physicians above mentioned gave it with very great caution, and in small doses; but experiments since made have ascertained, that it may be safely administered in considerable quantities.

On this subject we are indebted to Dr. Powell, who, in his observations on the internal use of the nitrate of silver, clearly proves “that it may be taken into the human stomach in much larger quantities than analogy would lead us to suppose, with safety, and, in many cases, with manifest and superior advantage.” — When Dr. Powell first began to administer this medicine, he gave it in pills; but, as he feared to proceed further than with doses of a grain in a solid form, lest in such a concentrated state it might act as a caustic upon the stomach, he substituted a solution of it in *aqua menthæ viridis*, which seemed best to cover its unpleasant taste, and to afford the means of increasing its dose, and safely ascertaining its effects. Dr. Powell found that the stomach will bear, without



inconvenience, three times more of this medicine in pills than in solution. He was able, in some instances, to give the quantity of fifteen grains in the form of pill, when the stomach would not bear more than five grains in solution \*.

In addition to these accounts of the employment of nitrate of silver for the cure of epilepsy, which have been published, I have to communicate some valuable information on the subject, of a later date, the result of experience, with which I have been favoured by my friends, Dr. Baillie, Dr. Richard Harrison, Dr. Roget, and Dr. James Johnson.

Dr. Baillie has a high opinion of the efficacy of the nitrate of silver in epilepsy, and has, in many cases, given it with great advantage.

He has favoured me with the following particulars respecting one case, in which this medicine was successfully prescribed by him and Dr. Roget in consultation. In this instance, a lady twenty-two years of

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\* Medical Transactions, vol. iv. p. 85.

age, who had for a considerable time laboured under frequent and strong epileptic fits, took small doses of nitrate of silver, which were gradually increased to six grains three times a day. After two months the paroxysms became less violent, and occurred at longer intervals, till by degrees they entirely disappeared, and the patient has remained for ten years entirely free from every symptom of the complaint.

Dr. Baillie has lately been informed by a lady, who had been for many years afflicted with a violent epilepsy, that she was completely cured by the administration of nitrate of silver for a considerable length of time.

Dr. Richard Harrison has been kind enough to favour me with an account of two cases of confirmed epilepsy, in which he prescribed the nitrate of silver with complete success. The first is that of a gentleman of an irritable nervous habit, who had for many years been afflicted with frequent attacks of the disease, and who had tried almost all the usual remedies in vain. He had been bled and purged very frequently and very freely for a whole year. The

system of depletion, during this time, had been carried as far as possible, with a view of effecting a thorough change in his constitution. Digitalis had been given, and a great variety of tonics and antispasmodics, but without the smallest relief. Under these circumstances, Dr. Harrison prescribed the nitrate of silver, three times a day, in the dose of one grain. In a short time its beneficial effects appeared, the disease gave way to the remedy, and the patient remained free from its attacks for seven months. On discontinuing the use of the medicine, the fits returned, but, on again having recourse to it, they disappeared, and he has for a long time remained in good health. — The other case which Dr. Harrison has been kind enough to communicate to me is that of a lady, of a very delicate constitution, who, upon the first appearance of the menses, became affected with frequent fits of epilepsy, to which she remained subject for fifteen years. When Dr. Harrison first saw this patient, the catamenia were irregular and deficient in quantity, and he ordered the oleum terebinthinæ as an emmenagogue. This



medicine produced the expected effect, but did not lessen the violence or frequency of the epileptic paroxysms. In this case the system of depletion by bleeding, by purging, and very low diet, had been carried to an extreme degree, in consequence of which she became affected with lowness of spirits, œdematous swellings of the legs and feet, and other marks of debility. On a change of diet, and the exhibition of the nitrate of silver, this lady's health was soon improved, she gradually continued to amend, and has now been free from the complaint for nine months.

Dr. Harrison thinks the nitrate of silver particularly well adapted to those epilepsies which arise from a too great irritability of the nervous system ; in fact, where it very much approaches to hysteria, which is frequently the case ; but he thinks also, that it may suspend the fits, where they arise from other causes, and have taken firm and full possession of the constitution. In support of this opinion, he adduces the case of a lady under his care, who remains free from the complaint as long as

she is under the influence of the remedy, but who again becomes affected with it on discontinuing its use.

Dr. Harrison remarks that epilepsy, especially that connected with hysteria or hypochondriasis, is a very common disorder in Italy ; where, however, the anti-epileptic power of nitrate of silver was not known till he successfully administered it to Mr. More, an eminent engraver at Naples. — In consequence of Dr. Harrison's success in this instance, it was given by Sementini, professor of chemistry, with surprising advantage in very many cases which he has published.

Dr. Roget informs me, that in the case of a lady, about thirty years of age, who had laboured under this disease for six years, the nitrate of silver appeared to protract the intervals of the fits very considerably. The dose had been gradually raised to eight grains a day without producing any inconvenience ; but Dr. Roget found that it could not be pushed much further with safety. After continuing the remedy for four or five months, this lady went into the country for the summer ; and from an

over anxiety to be cured, persisted in taking the nitrate much longer than Dr. Roget had advised, and he suspects in greater quantity than he had prescribed. Her health suffered materially in consequence; she became emaciated, and was reduced to a state of alarming debility, from which she was several months in recovering. It was remarkable that during this period she had no epileptic attacks; but as soon as she regained her strength, they returned as usual; and Dr. Roget believes that they have since continued to recur at nearly the same intervals as before she made trial of the medicine.

Although the nitrate of silver has been successfully employed in epilepsy by some practitioners, I think it right to state, that it has been administered by others in full doses, and for a considerable length of time, without the smallest advantage. On this subject, reference may be made to Dr. M'Ginnis of Portsmouth, in particular, who has prescribed it in many cases both in the recent and chronic disease, even in doses of twelve grains, without any perceivable effect.



I do not find, however, in the writings of English physicians, or in the private communications of my medical friends, any accounts of deleterious effects produced by this remedy ; but, in a book lately published upon nervous diseases by M. Georget \*, a French physician, the nitrate of silver is pronounced to be a dangerous medicine. — It does not, however, appear probable from what M. Georget has said on this subject, that he has either fairly tried this preparation of silver himself, or been informed of its effects by experiments made with it by others. He seems to me, to have condemned it upon no other ground, than that of having found very great and striking marks of disease in the stomach of a woman who had died in the Salpetriere, after having taken it for eighteen months, previously to her admission into that hospital. M. Georget does not give us either a history of this case, or an account of the doses of the medicine, but contents himself with saying, that he has great difficulty in

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\* *Phys. de Syst. Nerv. &c.* vol. ii. p. 401.

conceiving how the blindest empiricism should have led any one to attempt the cure of a diseased brain by cauterizing the stomach.

I wish here to mention a very curious fact, which, however, is now pretty generally known, namely, that when the nitrate of silver has been given for a considerable time, although in small doses, it very often produces a very extraordinary discoloration of the skin.

This phenomenon has been observed by several writers. Dr. Albers of Bremen, some years since, noticed the fact ; and he has described one case in particular in which the discoloration took place. A female, thirty years of age, he says, after a long continued use of the nitrate of silver, experienced this change of colour in a very striking manner. The tongue was at first bluish, and then grew gradually darker, till at last it became, as it has since continued, quite dark and almost black. This blue colour spread all over the body, yet was most intense on the face, on the forepart of the neck, as far as the middle of the bosom, and on the hands and nails.

Whenever the patient held her arms in an erect posture, the blue colour was considerably lessened, and even disappeared almost entirely. The sclerotica was likewise considerably coloured. Dr. Albers has been informed by Dr. Reinmarus of Hamburgh, that two patients of that town had exhibited a blue tinge of the skin, after the use of the nitrate of silver; he also learned the same fact from Professor Rudolphi of Berlin; and he mentions three cases communicated to him by Dr. Schleiden of Hamburgh, of similar effects from the exhibition of this medicine. Dr. Albers proposes the following questions:—“ 1st. As the blood in these patients is of the natural hue, can it be doubted that the blue colour must be looked for in the *reticula malpighiana*, in which it is produced by the nitrate of silver? 2nd. Why does this effect of the remedy occur so seldom; and why does it often not take place at all, when exhibited in very copious doses, but not long continued, as is proved by an essay lately published by Dr. Powell? 3rd. Is there any probability that this change of the cutaneous colour is produced by the



protracted application of the remedy? If this were the case, the second question would be answered. 4th. Why do the parts exposed to the light more particularly contract a blue colour? 5th. What remedies might be prescribed to cure this alteration of the skin?"

Dr. Roget\* has described a case similar to that of Dr. Albers, in which a young lady began a course of *argentum nitratum*, in the form of pills, gradually increasing the dose from one to two grains, three times a day, and after an interval of two months, still farther increasing it, by little and little, till at last the quantity taken amounted to 18 grains in four and twenty hours. In this quantity the medicine was continued, with occasional intermissions of ten days or a fortnight, for four or five months; and then the disease becoming less violent, and at length altogether ceasing, was left off by a gradual diminution of the doses. During the whole of the period that the patient

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\* Medical and Chirurgical Transactions, vol. vii. p. 290.

was taking the medicine, her general health continued to improve, and she got rid of a variety of nervous feelings to which she had before been subject. Some time after the remedy had been totally discontinued, she observed that the tongue and fauces had acquired a very dark colour, as if stained with ink; this for a time increased, and afterwards somewhat diminished; but a considerable degree of blackness in those parts has remained permanently fixed. — About a year and a half after she first began to take the nitrate of silver, and several months after she had entirely left it off, it was observed that the complexion was growing dark; this was first noticed about the eyes, but not particularly about the lips. This change has gradually proceeded without any perceptible derangement of health, affecting equally the skin over the whole body. It appears to have attained its maximum in the course of a year; and though it is now six years since she has taken any preparation of silver, it still continues with nearly equal intensity.

Dr. James Johnson, who has administered the nitrate of silver in many cases of epi-

lepsy with success, is of opinion, both from his own observations, and those of others, that this medicine is more especially efficacious in the disease when it produces a discoloration of the skin; and I think it probable that this may be the case, as the change of colour clearly shows that the remedy has affected the constitution.

I wish to remark, however, that several cases have occurred in which the colour of the skin has been changed without a cure of the disease, and others have been observed, in which the disease has been removed by the nitrate of silver, without having occasioned any such discoloration.

Dr. Roget informs me, that his experience does not lead him to support the opinion that the nitrate of silver is more likely to prove successful in the cure of the disease, when it produces a dark colour in the skin, for he has met with several instances in which this change occurred to a great extent, without the epilepsy being cured, and sometimes without its being at all mitigated.

Dr. Roget, in his account, in the Transactions of the Medical and Chirurgical



Society, of a discoloration of the skin, produced by the nitrate of silver, has mentioned a very curious circumstance, namely, that the change of colour did not appear till six months after the medicine had been discontinued ; and he informs me, that he has lately had a similar case under his care, though the discoloration which took place, on relinquishing the medicine, was not in so great a degree.

Dr. Roget has lately had an opportunity of seeing the lady, whose case he has described in the Transactions of the Medical and Chirurgical Society, and he assures me, that now, after a lapse of twelve years, the discoloration of the skin remains, and that the darkness of the complexion continues to be quite as intense as ever. Dr. Roget particularly noticed the deep blue colour of the tongue, which looked as if tinged with ink.

Dr. Vetch has been kind enough to communicate to me an account of an instance of discoloration of the skin, produced by the nitrate of silver, which appears to be in some respects singular, and curious. A lady under his care, after a long conti-

nued use of this remedy, became discoloured in the upper part of the body, whilst the colour of the lower part was unaltered; and in both eyes the iris, which was naturally of a black or deep brown, was changed to a light blue.

Next to the preparations of silver those of *zinc* are by some considered as the most useful in epilepsy. They have been recommended by Gaubius, and by many others since his time, particularly by Hart, Guthrie, Fouquet, Percival, and Rush.

Dr. Hart, in his inaugural dissertation, speaks very highly of the use of the flores zinci, and adduces several instances in which it was found efficacious. Dr. Guthrie, in a letter to Dr. Duncan, mentions a most alarming case of epilepsy, in which the paroxysms returned four times in twenty-four hours, with wonderful violence, while each fit was accompanied by a most distressing tetanus. In this instance, Dr. Guthrie formed the resolution of giving the flowers of zinc, with what he calls an empiric boldness, ordering eight grains of that medicine the first day, with conserve of roses, and augmenting the dose by four grains every

fourth day, till the thirty-second from the attack, when it amounted to two scruples, which the patient took consecutively for a month, at the end of which time every vestige of the disease disappeared. Although Dr. Guthrie thought it prudent to continue this large dose of the medicine so long, no disagreeable consequences attended its exhibition, except a trifling nausea towards the beginning, which soon went off.\*

A celebrated surgeon of Edinburgh prescribed with advantage this medicine in a confirmed epilepsy, which had existed for ten years ; and also in another, in which the fits were preceded by an aura epileptica.

This medicine has also been recommended by Dr. Haygarth of Chester, and Dr. White of York. Dr. Cullen, however, has not found zinc useful in these cases ; nor can I, from my own experience, speak in its favour in epilepsy, although I have found it beneficial in *chorea sancti Viti*, and other nervous diseases. †

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\* Duncan's Ann. Med. vol. iv. p. 479.

† Perhaps the different accounts we have of the effects of zinc in epilepsy may be understood, when we recol-



Another remedy, which has been celebrated for the cure of epilepsy, is the *cuprum ammoniatum*. Dr. William Battie speaks of the usefulness of this medicine in the highest terms. "The cuprum ammoniacale," he says, "seldom fails to cure epilepsy; never, if the disease be idiopathic, and the patient not exhausted;" and he adduces several instances in which it effected a cure in inveterate cases, which had obstinately resisted other medicines.\* Though a remedy of great activity, we are told that it may be given even to very young subjects without hazard. The celebrated Michaelis prescribed the cuprum ammoniatum for fourteen persons afflicted with epilepsy, of whom four were completely cured, and ten considerably relieved. Other cases are related of the successful employment of this remedy by several physicians of great respectability.†

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lect that zinc contains cadmium in different proportions, which may be the active part of the composition.

\* Ann. of Med. vol. vi. p. 377.

† Dr. Duncan, Dr. Stone of Grantham, Dr. Heysham of Carlisle.

Dr. Cullen had a favourable opinion of the cuprum ammoniatum, which he introduced at Edinburgh, where it has been a good deal employed. The power of this preparation of copper in epilepsy was evinced by a very extraordinary accident which happened some years ago. "A young woman, a patient at one of the public medical institutions of Edinburgh, rashly took for a single dose a whole box of pills containing this medicine, which had been given to her to take in gradually increasing doses. The effects were proportionally violent, and her life was despaired of; but the event was, that she not only recovered from the effects of the medicine, but never after had any return of her epilepsy."\* I wish to remark, that although the cuprum ammoniatum has, in many instances, been employed with very great advantage, it has, on a fair trial, very often completely failed, as appears from experiments made with it by Dr. Home and others.† It has been

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\* Edinburgh Practice of Physic, p.419.

† Dr. Hook, Dr. M'Ginnis.

given in doses of half a grain, and in some instances from two to four grains.

Certain preparations of *lead*, generally considered to be deleterious, have been prescribed in this disease with good effect. Dr. Rush of Philadelphia, in some instances, ordered the *acetas plumbi* in the dose of two grains three times a day, with complete success, and in others with considerable advantage. Another American physician\* tried the same remedy in his own case, and was very much benefited by it. He took it at first in the dose of half a grain three times a day ; afterwards he increased it to a grain, and gradually to eight grains twice a day. This last quantity was successfully continued for three or four weeks. Previously to the trial of the medicine, Dr. Spence had been under the full influence of mercury, and seems to doubt whether this circumstance might not have contributed to the cure.

*Tin* has been successfully given in epilepsy, particularly to children, when there

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\* Dr. Spence.



was reason to suspect the presence of worms in the stomach or intestines ; and Dr. Fothergill thought that much benefit had been received in several cases from the administration of it, even where there was no just reason to suppose that worms were the cause. Dr. Fothergill gave this medicine sometimes largely, and without addition, that he might be the better able to decide on its efficacy ; and sometimes he joined with it other medicines, such as a decoction of misletoe, valerian, &c. He usually prescribed the filings of tin, with conserve and syrup, in form of an electuary. Dr. Cullen, for several reasons which he mentions, thinks that preparations of tin may be serviceable in epilepsy, though he has had no experience of their use.

Dr. Shearman, in his *Observations on Epilepsy*, published in the *London Medical Repository*, says, “ At the present day the cure of this disease is principally confided to two medicines, both of which are reported to have been occasionally successful, though it must be confessed many failures have occurred in the employment of each of them. These are the nitrate of

silver, and the oil of turpentine ; one of which acts as an evacuant, the other as a tonic, and produce occasionally the same good effects as have heretofore been produced by other evacuants, and other tonics, in those cases of symptomatic disease, which depending upon the presence of noxious matter in the intestines, or upon a want of tone in the moving powers, will speedily disappear when the respective exciting causes are removed. The medicine which in my hands," adds Dr. Shearman, "has more frequently than any other succeeded in removing epilepsy, is the *elutriated oxyd of tin*, given in the dose of from two scruples to a drachm, to an adult, night and morning, for about four days ; at the end of that time giving a purgative, and again resuming the use of the medicine or not, according to its effects upon the system, or its apparent power over the disease."\*

Willis appears to have had a favourable opinion of the administration of *mercury*

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\* Lond. Med. Rep. vol. xviii. p. 190.

in epilepsy ; and Dr. Cullen informs us that in some instances the disease has been cured by the accidental use of that medicine. M. Tissot mentions some cases of epileptic fits occurring in persons affected with lues venerea, in which both complaints were removed by the employment of mercury ; and a Mons. Housset speaks very highly of its use, and pronounces it to be the most prompt, active, and certain remedy in nature for the idiopathic disease. “Mercury,” says a learned modern writer, “has been tried in almost every form, and to almost every extent, sometimes, indeed, to that of salivation, in which state some practitioners pretend to have found it highly useful. As a general plan, however, this can never be advisable ; and Muralt admits that in most cases, where it has seemed to answer, it has only restrained the disorder, or prolonged the interval, but not effected a radical cure.”\*—I have had no opportunity of judging of the use of this remedy in epilepsy ; perhaps some of its

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\* Good, vol. iii. p. 546.



preparations, in alterative doses, might be tried without injury, and with some hope of success.

*Antimony* has not been much used, I believe, for the cure of this disorder. Tissot, however, has given it sometimes alone, and sometimes in combination with mercury, with advantage, especially to children; and Dr. Abercrombie informs me, that he has seen very good effects from keeping patients under the influence of tartrite of antimony, in such doses as the stomach could bear, repeated four times a day.

*Arsenic*, in the form of Fowler's solution, has, in a few instances, been prescribed in epilepsy. Dr. Prichard gives an account of two cases, in which he employed this medicine with supposed advantage, though he seems inclined to attribute the cure principally to purgatives, which he gave with the arsenic.\*

“ All these medicines seem to act by taking off the tendency to irregular nervous action, and consequently the tendency to a

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\* Arsenic was given in these cases, because the return of fits was periodical.

return of the paroxysm, where a habit of recurrence has once been established; for, in many instances, such habit alone appears to be as much an adequate stimulus, as a similar habit in intermittents: and hence, whatever has a tendency to break through such a habit, must have a beneficial effect.” \* — Dr. Abercrombie is of opinion, that the medicines called tonics act beneficially in epilepsy by restraining vascular action.

In the cure of epilepsy connected with debility, antispasmodics and narcotics have, by some writers, been very strongly recommended, either alone, or with the tonics above mentioned. The principal antispasmodics are, *valerian*, *assafœtida*, *camphire*, *castor*, *musk*, and *æther*; to which some add *phosphorus*, and *oil of turpentine*. The chief narcotics are, *opium*, *hyosciamus*, *stramonium*, and *digitalis*.

*Valerian* was formerly much celebrated as a medicine adapted to the cure of epilepsy; indeed by some it was considered as a specific. It was chiefly employed

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\* Good, vol. iii. p. 548.

on the continent, and particularly by the French, who, in the idopathic disease, seem almost wholly to have relied on it for a cure in these cases. Tissot says, that the root of valerian was described by Dioscorides, and employed by Aretæus \*; that Fabius Columna, who had the misfortune to be epileptic, cured himself, and also many others with it; and that Panarolli, a celebrated physician at Rome, administered it with success to a person who had two or three fits every day; and also in other cases of the disease. Valerian, mixed with puff-balls, (*lycoperdon bovista*) formed, it is supposed, a powder, which was said to have been successfully exhibited in many cases in Germany. This powder is highly spoken of by several German writers. In the Literary Gazette of Jena it is stated, that the *lycoperdon* is almost a specific for epileptic fits, particularly those arising from sudden dread or terror. Tissot quotes many authorities in favour of vale-

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\* Tissot says, that Aretæus employed this medicine under the name of  $\phi\omicron\upsilon$ . He does not however mention it, when treating of the cure of epilepsy.



rian ; and concludes his account of it with saying, that fortunately it has become a remedy in which all enlightened physicians confide, and that he attributes to it the cure of a great number of complete epilepsies (*epilepsies essentielles*). M. Tissot recommends that this medicine be given in powder, or spiritous extract, these being the best forms. He is convinced, that there is no remedy to be compared to this in epilepsy, and in all diseases of the nerves which require strengthening medicines. Notwithstanding this strong recommendation, and many other testimonies in its favour, which might be brought from various writers, I am of opinion, from what Cullen, Home, Frazer, Heberden, Woodville, and many others, have said, and from what I have seen, that valerian is a medicine of very little power in this or other nervous disorders. It has often been given for a considerable time in very large doses, in substance, without any good effect. Dr. Home says, “ Probably when it does service, it acts as a bitter tonic ; it stimulates, and therefore must hurt in inflammatory cases. Although much used at present, it

always appeared to me a weak, and often a hurtful, medicine.”\* Dr. Frazer observes, that the wild valerian has been long regarded as a remedy of considerable utility in the treatment of most convulsive or nervous disorders, and particularly esteemed for its efficacy in epileptic cases, and mentions the names of many authors, who have recommended it. He observes, however, that notwithstanding the favourable reports of this medicine, it has been given in Edinburgh to the extent of two ounces daily, without any considerable effect: and that this perfectly coincides with his own experience; for, in two cases of epilepsy under his care, in which it was taken in very large doses, and continued for a considerable length of time, it proved entirely useless.†

With respect to the use of *camphire*, *assafœtida*, *castor*, *musk*, *æther*, and many other medicines of this kind, in epilepsy, I have very little to say. Tissot observes, that amongst the remedies properly

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\* Home.

† Frazer.

called anti-epileptic, camphire, castor, assafoetida, and rue, held a distinguished rank ; and Dr. Cullen speaks in favour of musk and the oleum animale, which, in considerable doses, and in their pure state, may be, he says, and often have been found, effectual remedies.

Dr. Fothergill entertained a singular opinion respecting the use of valerian, castor, assafoetida, and other foetid gums, in epilepsy. He thought that such disgusting medicines might act beneficially, by lessening the appetite, and allowing nature thus to recover herself, and shake off the disease which indulgence had principally produced. \*

I do not find any account of trials made with these medicines, which would induce me to employ them ; and I am inclined to think, from my own experience, that they have little or no power over this disease. I am willing, however, to admit that camphire and assafoetida are highly useful in several other nervous affections.

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\* Fothergill's Works, vol. iii. p. 206.



The French physicians have placed much confidence in valerian for the cure of idiopathic epilepsy : some of them seem to have trusted to its efficacy alone. Indeed, generally speaking, in their treatment of epilepsy, they have employed but very few means. M. Georget, in his inquiries respecting the physiology, and the diseases of the nervous system, seems inclined to condemn, without distinction, the whole tribe of what have been called anti-epileptic medicines. The most violent poisons, he says, have been extolled, and employed for the cure of this disease ; the most painful operations have been recommended, but no curative indication has ever been previously established, which might by these means be fulfilled. The practice is wholly and in the highest degree empirical. Practitioners have boasted, he says, of the efficacy of pretended antispasmodic, narcotic, antiperiodic, and sedative remedies, both mineral and vegetable ; and of cauterizing the head, and of giving the nitrate of silver internally : but all these means are either useless or dangerous ; and some of them may prove destructive. It does not, however,

appear that M. Georget has employed these various remedies which he so strongly and indiscriminately condemns.

The French physicians have had the best opportunities of making trials of different modes of treatment of epilepsy\*, and it is greatly to be lamented that they have given us so little practical information on the subject. Their physiological and pathological accounts of the disorder are very good, and their observations of appearances on dissection are highly instructive; but their practical remarks, and their experiments, with a view of ascertaining the anti-epileptic powers of medicines, are very few and imperfect.

In the Journal of Dr. Hufeland, professor of medicine at Jena, we have an account of the good effects of *phosphorus* in epilepsy. The use of this remedy was

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\* We are informed from good authority† that in the year 1813, there were 162 epileptic patients in the Bicêtre, and 289 in the Salpêtrière, together amounting to a number probably ten times greater than that of the epileptics in all the hospitals of London put together.

† Dictionnaire des Sciences Medicales.

discovered by accident. A young lady, subject to violent spasms of the stomach and bowels, terminating in fainting, or an epileptic fit, took about an ounce of water, containing two drams of phosphorus, instead of an infusion of peppermint, on the accession of certain symptoms, which by experience she knew to be the forerunners of an epileptic paroxysm. The consequence was, that the fit was completely prevented. Her physician, taking advantage of this accident, afterwards prescribed for her a mixture, containing six grains of phosphorus, half an ounce of oil of hyosciamus, and two ounces of peppermint-water. Of this mixture the patient took a table-spoonful every two hours, for two months, and became entirely free from the disease. The same physician, prescribed phosphorus in three other cases of epilepsy with success; but in some instances he found it hurtful. Dr. Hufeland considers phosphorus to be a dangerous remedy. He has known several instances, in which, having been boldly prescribed by quacks, it produced much mischief. It cannot be given, he says, in a



dose of more than two grains with safety. He found that larger doses always produced burning pains, and one grain was generally sufficient. With regard to form, he observes that it must be completely dissolved and involved, so as to prevent its stimulating the stomach too much. Well triturated with mucilage of gum Arabic, in the proportion of two grains to six ounces of water and an ounce of syrup, he obtained an active and pleasant emulsion, to which he added thirty drops of the anodyne liquor of Hoffman, and in this form he employed it without inconvenience. \*

Another medicine, which has lately been a good deal employed, and often with success, in epilepsies, particularly those connected with worms, is the *oil of turpentine*.

Dr. Latham, in his work on diabetes, informs us, that he has several times relieved, and more than once cured epilepsies, by the *oleum terebinthinæ*.

A great many cases are related in various publications concerning the antiepileptic

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\* Annals of Medicine, vol. iv. p. 276.

power of this remedy. — Dr. Young, in the fifth volume of the Transactions of the College, gives two instances of the good effects of the *oleum terebinthinæ rectificatum*, given in a large dose. A child, about eleven years old, who had been liable to epileptic fits for some months, which had generally recurred twice a week, with considerable severity, who had formerly been supposed to have worms, but probably without foundation, took an ounce of this oil, which produced the usual violent effects, but no worms. The following week she had a slight fit, after having been much heated and fatigued, but after that time she continued free from any return of the complaint for two or three months, and was to all appearance perfectly cured. Dr. Young tried this medicine in small doses in a variety of instances, giving from ten to twenty minims three times a day, with very little encouragement; but in the case of a boy, at Lancing, who had been subject to fits about once in ten days, he prescribed it in a full dose with complete success. — The late Dr. Edward Percival of Dublin has published, at considerable

length, in the Edinburgh Medical and Surgical Journal, an account of three cases of epilepsy, in which he ordered the oil of turpentine with great advantage. In the first of these cases, in which the fits usually occurred twice or thrice daily, after having prescribed active purgatives, blue pill, opium in full doses, valerian, camphire, and ether, with blisters, without any material beneficial effect, Dr. Percival ordered that two drams of oil of turpentine should be diffused in the way of emulsion by syrup, in a pint of mint water, and that an ounce of this mixture should be taken every four hours. On visiting his patient, after a short time, he was agreeably surprised to find that no return of convulsions had been experienced after the first dose of the medicine. Several months afterwards, however, the complaint, in a slight degree, returned, and on again administering the oil of turpentine, it gradually and wholly disappeared. About seven months afterwards, this patient had three fits of epilepsy in 24 hours : the turpentine was again administered in the dose of a drachm every four hours, and she con-



tinued for a short time free from the fits, but she at length became maniacal, and they returned with as much frequency as before the administration of the turpentine. In the two other instances in which the oil of turpentine was administered, although very considerable relief was experienced for a time, the disease was not removed. For a more minute account of these cases, I refer to the Medical and Surgical Journal.

Dr. Lithgow, of Coleraine, speaking of the use of oil of turpentine in epilepsy, observes, that though it is probable that this medicine may not turn out to be altogether a specific ; yet, as affording relief in a complaint which has baffled the utmost skill of the physician, it must be considered as of the greatest importance. Dr. Percival concludes, from his experiments, that the only specific action of this medicine was emmenagogue ; and Dr. Lithgow says, that he was led to agree with Dr. Percival in opinion, and to think that “ how valuable soever the discovery might be to the female, the male sex were to lose all the benefits arising from it.” He was, however, induced, by the employment of it in

two cases, which he relates, to change his opinion, and to conclude, “that although its power was great as an emmenagogue, it was an unknown effect which produced the ascendancy over the epileptic attack.”\*

Dr. Johnson, speaking of epilepsy, and adverting to the good effects of lytta, lunar caustic, and oil of turpentine, in that disease, observes, that these stimuli produce irritation in, and (what is called) a determination of blood to, certain other organs and parts of the body, particularly the urinary apparatus and alimentary canal; and that it is during the continuance of this irritation, or determination to a distant part, that the encephalon obtains an immunity from disturbance. Dr. Johnson has administered the *tinctura lyttæ*, and has employed blisters along the whole course of the spine in numerous cases of epilepsy, with very good effect. He found that when the urinary organs came under the influence of these medicines, the paroxysms were generally moderated in force, and the

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\* Edinburgh Medical and Surgical Journal, vol. .  
p. 301.

intervals lengthened in duration. He has had some patients who took as much as eighty or ninety drops twice or thrice a day, without any other inconvenience than a trifling strangury. These drops had a most exhilarating effect on the spirits. Dr. Johnson has lately found many beneficial effects result from the use of this remedy in other derangements of the nervous system.\*

In diseases of irregular and excessive action, it is reasonable to suppose that sedatives would be found useful ; accordingly the principal medicines of this class have been employed, such as *opium*, *hyoscyamus*, *stramonium*, and *digitalis*. In cases of epilepsy, unattended with plethora, there is no antispasmodic from which I should, *à priori*, expect greater advantage than from a proper administration of opium, especially where the disease is attended with pain, or produced by passions of the mind. This medicine has been given, but not so

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\* Dr. J. Johnson's Practical Treatise on Derangements of the Liver, &c., p. 105.



frequently as might have been expected, or in such a way as to ascertain its power over the disease. A case is related at considerable length, in the fourth volume of the *Annals of Medicine*, by Dr. Huxby of Pontefract, terminating favourably, under the use of opium; but in this instance argenti nitratum, ferrum vitriolatum, calomel and musk, were also given. Indeed Dr. Huxby seems to refer his success partly to the musk prescribed in conjunction with opiates. Dr. Darwin tells us that, in two cases of epilepsy, in which the fits occurred during sleep, a grain of opium given at bed-time for some months removed the complaint. M. Tissot says, that *Ætius* and *Avicenna* considered opium as a specific in this disease, as also some of the moderns, particularly *Duchesne*, who gave it with aromatics, under the name of *nepenthe*. *De Haen* relates at length the case of a boy, six years of age, dreadfully afflicted with epileptic fits, which came on during sleep, in which, by the administration of opium, at first in small doses, and afterwards considerably increas-

ed, his sleep became natural, and the disease was entirely removed.

Some cases might also be quoted from medical journals, in which this remedy was administered with advantage; but physicians seem in general to have contented themselves with speculating upon its probable effects, rather than ascertaining them by actual trial. Thus, Dr. Cullen says, “in many diseases the most powerful antispasmodic is certainly opium; but the propriety of its use in epilepsy has been disputed among physicians. When a disease depends upon a plethoric state, in which bleeding may be necessary, the employment of opium is likely to be very hurtful; but when there is no plethoric or inflammatory state present, and the disease seems to depend upon irritation, or upon increased irritability, opium is likely to prove the most certain remedy.”

Dr. Home, in his clinical experiments, mentions opium among the remedies recommended in epilepsy; but he did not fairly try its power. He prescribed fifty, and afterwards eighty drops of paregoric elixir four times a day, for five days, in one

case ; and in another, eight grains of pilulæ Matthæi once in the afternoon and again at bed-time ; and because the patient the next morning had a fit, the medicine was discontinued. — From such trials as these, or indeed any that I find on record, nothing, I think, can be confidently concluded respecting the use of opium in this disorder.

The external application of opium has, in some instances, been found highly useful in this disease. Mr. Ward, in his treatise on opiate friction, mentions a case, in which much relief was experienced from that practice ; and Lalande says, there was lately brought to M. Portal a young lady, who was every day attacked by violent epileptic fits, which began in one of her toes ; which circumstance suggested to that able anatomist the idea of cutting the nerve, for the purpose of interrupting the communication : but he began by the application of opium to the nerve, and that alone proved sufficient to effect a complete cure. \*

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\* Med. Journal, vol. iv. p. 570.



*Stramonium* has been, we are told, successfully administered to patients labouring under epilepsy. This medicine was introduced, and is highly spoken of by *Storck* in all convulsive cases; and *Odhelius*, a Swedish physician, employed it with great advantage in this complaint. Of fourteen patients labouring under epileptic and convulsive affections to whom he gave the stramonium in the hospital at Stockholm, eight were completely cured, and five were relieved. \* Other practitioners seem not to have administered this remedy with equal success, yet, in general, they speak favourably of it. †

*Digitalis* and *hyoscyamus* have been, in a few instances, tried, but not sufficiently often to enable us to form a judgment of their power over the disease. In the second number of the *American Recorder*, two cases are related, in which the complaint is said to have been cured by *digitalis* in small doses; and a modern writer asserts, that this

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\* *Odhelius*, *Comm. Acad. Suec. Stock.* vol. xxvii, p. 277.

† *Greding, Wahlbom, Wedenberg.*

is one of the disorders in which the digitalis has been found serviceable.\*

Digitalis is recommended in epilepsy in Salmon's *Botanologia*, a book published a hundred years ago. "By late experience," the author says, "it (digitalis) has been found effectual against the falling-sickness, and divers have been absolutely cured thereby."

Dr. Percival having been informed that a large dose of foxglove had been found capable of effecting a radical cure of epilepsy, directed, in a case of this kind, "that a decoction should be made of two drams of the dried leaves of that vegetable, in six ounces of water, and that one half should be given immediately, and the remaining half two hours afterwards. In this case no sensible effect of any kind followed the exhibition of the medicine. A few days afterwards the same quantity of the dried leaves of digitalis was infused in the like proportion of water, and, when cold, was administered as before. It produced

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\* Thomas, Ed. Med. and Surg. Journ. vol. ix. p. 271.

no apparent effect whatever." Being desirous of giving the fullest trial of the efficacy of digitalis, in so hopeless a case, Dr. Percival directed three drams of the dried leaves to be decocted in six ounces of water, and to be given, the one half immediately, and the other after a lapse of two hours. Both of the draughts were duly administered, when some time afterwards nausea, vomiting, sweating, and at length purging, were induced to a considerable extent, and for several hours; but on the following day, the patient had two regular fits of her accustomed epilepsy.

Mr. Mansford thinks, that the digitalis is not suited to the cure of epilepsy. Whatever suddenly depresses the system, as well as whatever excites it, will, he says, aggravate the disease; and in this manner the digitalis may be expected to be hurtful. Mr. Mansford observes, "that this medicine, from its power in reducing inordinate arterial action, has been recommended in cases accompanied by that state of the system; but that his own experience has warned him from its further use, it having, in



two cases of that description, been followed by an alarming increase of the paroxysms.” \*

Some practitioners on the continent, and one in particular in this country, have strongly recommended galvanism for the cure of epilepsy. — Several cases have been published, in which this remedy has been tried by German physicians ;† but the result of their experiments is not much in favour of the practice. The paroxysms of the fits have been shortened, and the intervals lengthened ; but, as far as I know, no radical cures of the complaint have been effected by this power, as it has been employed abroad. — Mr. Mansford, however, who thinks that the disease consists in an accumulation of electric matter in the brain, “ excessive with respect to its existing capacity,” has, in conformity with his theory, employed galvanism in several cases with great advantage, as he assures us, and in some with complete success. Mr. Mansford does not approve of the application of galvanism in

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\* Mansford, p. 99.

† Bischoff, Marcus.

the form usually recommended. "The indication of cure is not to be attempted," he says, "by powerful means used occasionally and interruptedly, to which the laws of life seem to be inimical; but by a weaker power steadily and constantly exerted, by which the force of habit may, by slow degrees, be eventually overcome." \* To accomplish his object, Mr. Mansford thought it desirable, "that a negative point should be established as near the brain as possible, and a positive one in some distant part of the body; which should preserve these opposite states, and be kept constantly in action." This could only be effected, he says, "by enclosing the body within the circle of the galvanic battery, with a power sufficiently strong to permeate the skin; or by previously denuding the surface, and using the simple galvanic circle; the metals being applied to the naked cutis." † To both these modes, he remarks, objections almost insuperable present themselves. These objections he particularly

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\* Mansford, p. 81.

† Ibid.

states, and then proceeds to describe his own method, for an account of which, and a description of several cases adduced in illustration and recommendation of it, I beg leave to refer to his book. \*

The plan which Mr. Mansford recommends does not, he remarks, preclude the use of other appropriate remedies. The state of the constitution, and the various circumstances operating as exciting causes of the disease, must be minutely attended to, for, without subduing these, all efforts to remove the proximate cause must necessarily be unavailing. † Accordingly he endeavours to lessen partial or general plethora when they seem to act as causes. He directs that mental emotions should be studiously avoided, and that particular attention should be paid to regimen and diet. He thinks that there are some cases in which a judicious employment of the medicines termed anti-spasmodic, and the vegetable and metallic tonics, may contribute to forward our views. With respect to narcotics

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\* Mansford, p. 82.

† Ibid. p. 91.



and sedatives, they are to be considered, he says, as of questionable effect. In two or three instances, Mr. Mansford confined himself to the galvanic process, in order more completely to establish its power; but, in general, he did not neglect the use of other appropriate remedies. "It is by a combination of means," he observes, "that the judicious practitioner seeks to subdue an inveterate disease;" and Mr. Mansford trusts that the plan which he has adopted will be found, in many cases, a potent auxiliary, although he thinks himself obliged, in candour, to confess that it has failed in many cases to produce ultimate benefit.

I have carefully examined a great number of medical journals with a view of discovering instances in which galvanism has been employed in epilepsy, but I do not find anything on the subject worthy of notice, excepting an account which is given of a case in which Mr. Whitlam, of Nottingham, made a successful trial of this remedy, and another communicated by Dr. Duncan of Edinburgh, in which a complete cure is said to have been effected by it.

Both these cases, especially the latter

are related much in detail. For the particulars of the first of them, I must refer to the 14th volume of the Medical and Physical Journal, and of the latter to the 8th volume of the Annals of Medicine.\*

By the abovementioned means we endeavour to fulfil the first indication in the cure of epilepsy, namely, to remove or to diminish the predisposition to the disease.

The second indication, which is to remove or diminish the influence of the exciting causes, equally requires our attention; for, should we fail in our attempts to correct predisposition, we may perhaps prevent excitement, by weakening the action of these causes, and thus obviate the attacks of the complaint.—The fulfilment of this indication is often exceedingly difficult, especially where the disease depends upon causes acting mechanically on the brain or its membranes; indeed so difficult, that many practitioners have con-

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\* For an account of some late experiments on the application of galvanism for medical purposes made in Germany, vide 10th volume of Medical and Physical Journal.

sidered such cases as wholly hopeless. — The antient physicians, however, under these circumstances, did not despair, but diligently employed active means, and often, as we are told, with success. One of the most powerful of these was the actual cautery, of the use of which they speak in very favourable terms. Aretæus, Galen, and Celsus, particularly recommended, and very boldly employed, this remedy in epilepsy; and Hippocrates, speaking generally, says, where medicine fails, steel may cure; where steel fails, fire may cure; where fire fails, the disease is incurable.\* In epilepsy, says Aretæus †, the application of fire to the head is necessary, and will be found to be of great use. ‡ He directs §, that the bone should be perforated as far as the diploe, and that afterwards cerates and

\* Ὅκοντα φάρμακα οὐκ ἰῆται σίδηρος ἰῆται ὅσα σίδηρος οὐκ ἰῆται, πῦρ ἰῆται. κ.τ.λ. Hip. Aph. Sect. viii. 5.

† Χρεῶν καὶ πῦρ φέρειν ἐς τὴν κεφαλὴν ἀνύει γὰρ.

‡ Perhaps by the word πῦρ he means caustic applications, and not the heated iron.

§ Τετρῆναι δὲ χρὴ πρῶτα τὸ ὀστέον μέχρι διπλῆς ἔπειτα κηρωτῇσι καὶ επιπλάσμασι χρεεσθαι ἐς τ' ἂν ἡ μῆνιξ τῶν ὀστέων ἀποσῇ. Aret. de Cur. Morb. diut. lib. i. c. 4.



cataplasms should be used, till the membrane is separated from the bones. The naked bones should be trepanned till the black and thick membrane is found.\* He seems to intimate, that a discharge from the parts should be kept up for some time. Celsus was a strenuous advocate for the actual cautery. After scarifying the back part of the head, and employing cupping-glasses, he directs the application of the hot iron.†

In some instances, both the cautery and trephine appear to have been employed by the antients in attempting the cure of epilepsy; but the moderns, until very lately, did not venture to try the former of these powerful remedies. The operation of trepanning was, however, recommended in some cases, by Boerhaave and others of his time.

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\* Τερέτρω χρὴ περικόπτειν τὰ γυμνὰ — ἕως ὅτε μελαιναί  
κοτε τρετῶν καὶ εὐρεθῇ ἢ μῆνιγξ.

† Occipitium incidere, et cucurbitulos admovere, *ferro candente*, in occipitio quoque et infra quâ summa vertebra cum capite committitur, adurere duobis locis ut per ea perniciosus humor evadat. Celsus, lib. iii. c. 23.

Boerhaave seems to have adopted the antient opinion, that peccant humours sometimes cause epilepsy, and that the direct evacuation of them may remove it: and Van Swieten observes, that extravasated blood, by compressing the encephalon, has sometimes produced the disease, which has been cured by the trephine. Tissot recommends the operation of trepanning, under certain circumstances of the disorder; and we have an account, in the Memoirs of the Royal Academy of Surgery, of a case of epilepsy produced by a blow on the head, in which great relief had been obtained by this practice. After applying the trephine, the patient remained free from the paroxysm as long as the wound was open, though on the cicatrisation of it the complaint returned.

Tissot says, there is a class of epilepsies which have their seat in the head; in the cranium, the investing membranes, or in the brain itself. In cases where external mischief may be considered as a cause of the evil, we ought not to hesitate, he thinks, to divide the integuments, so as to

operate upon the bone itself; and he adduces several instances in which the operation of trepanning, which he recommends as perfectly safe, was attended with complete success. Epilepsies depending upon ossification of the membranes, or abscesses in them, or upon hydatids, schirrus, &c. he considers to be absolutely incurable. \*

Of late years, the antient practice of attempting the cure of epilepsy by the actual cautery has been revived. Two pamphlets have been published at Paris, strongly recommending the above-mentioned practice, when the disease arises from causes acting mechanically on the brain or its membranes; the one by Baron Percy, the other by a M. Gondret, an eminent French physician. The work of the former is entitled, *Pyrotechnie chirurgicale*; that of the latter, *Considerations sur l'emploi du Feu en Médecine*.

In Baron Percy's work we have a very minute account of every thing relating to the use of the actual cautery in medicine and surgery; the best method of applying

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\* Tissot, p. 258. 266.



it, both generally and as adapted to particular local diseases, as of the eye, the ear, &c. Baron Percy very particularly describes the materials most proper for the construction of cauterizing instruments, and the form best suited to their use. He enumerates the various substances used by the antients in the manufacture of them, namely, gold, silver, copper, iron, and lead in fusion: he himself gives the preference to iron. He speaks also of the employment of the heat of the sun's rays, concentrated by means of burning glasses.

The antients, particularly Galen and Aretæus\*, recommend the employment of a very great degree of heat in cauterizing; but Paulus Ægineta and Coelius Aurelianus give the preference to that of a lower temperature. Baron Percy agrees in opinion

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\* Καυτήρα ἔμπυρον διαφανέα πυρῶσαι. These words, nowever, do not occur in the chapter concerning the treatment of epilepsy, but in that in which the cautery is recommended for opening abscesses of the liver, when the pus points externally. Aret. de Cur. diut. Morb. l. i. c. 13.

with Galen and Aretæus, and observes that a very hot cautery is, to one of a lower degree of heat, so far as relates to the pain of the burning, what a very sharp bistoury is to one that is blunt. He says that the cauterization of bones gives no pain. — It has been proposed by some, both in antient and modern times, first to make an incision down to the bone, where the cranium is to be operated upon, and then to apply the hot iron to the denuded part: but Baron Percy thinks that such incision would give more pain than the burning of the integuments by the cautery. The success of the application of fire, which Baron Percy has witnessed in many terrible cases of epilepsy, he refers to the simultaneous cauterization of the skin, the pericranium, and the bone, exciting in the cerebral system that specific commotion, that sensation from fire (*sensation ignée*) which no other agent can produce.

As the apparatus for cauterization is so terrific, Scultet has recommended a method of deceiving timid persons in the application of it; and Baron Percy informs us, that in cases of epilepsy, where the patients were

weak and obstinate, he has taken advantage of the paroxysm to employ the cautery, which he has repeatedly done with advantage. The ulceration and discharge, after cauterization, must be kept up, he says, for a considerable time, if we mean to reap the full benefit of the operation.

For a description of the various forms of instruments which have been employed for cauterization, and for an account of the method of using them in particular diseases, together with a history of cases illustrative of the benefit of this practice, and other interesting details, I must refer to Baron Percy's publication,—a work so highly esteemed in France, that the author was rewarded for it by having the most distinguished honours of the Academy of Surgery at Paris conferred upon him.

M. Gondret, influenced by the examples of the antients, and the opinions and experience of Baron Percy, has also employed with great success the actual cautery in many cases of epilepsy, supposed to depend on a diseased state of the cranium, the brain, or its membranes. M. Gondret adduces several striking instances of the



great utility of this practice, and proposes hereafter to communicate such a collection of facts relative to the pyrotechnic doctrine, as shall establish it by incontestible proof. In the mean time he adduces five cases of epilepsy, so obstinate as to have been considered hopeless, in which, under the inspection of a committee of the Royal Academy of Sciences, he employed the cautery with the most astonishing success.

The instruments used in these cases were heated to whiteness, so as to burn at once the integuments and the external surface of the bones. No incision had been previously made, but M. Gondret had followed the directions given by M. Percy in the *Pyrotechnie*. M. Gondret says, that after an experience of fourteen years, he had convinced himself that there are few chronic maladies, even reputed incurable, which may not at least be diminished in their intensity, if not removed, by a proper application of fire.

But although M. Gondret's experience had completely assured him of the truth of his doctrine, and the efficacy of his practice, he found very great difficulty in persuading

patients to submit to an operation so bold and frightful; he therefore directed his attention to the discovery, if possible, of a substitute for the actual cautery. His object was to find a remedy which might, without any terrific appearance, or occasioning much pain, imitate the graduated action of fire upon living parts. He at first employed cantharides, but soon found that they were inefficacious. Their action was too slow, and the absorption of them produced much inconvenience. What M. Gondret wanted was an application which might either irritate, or produce a rubefacient, or a vesicating, or an escharotic effect, according to the indications to be fulfilled. This, he says, he was fortunate enough to discover in a simple preparation, well known and much used, though for a different purpose, namely ammonia. This alkali, joined with fat or olive oil, he found would form a pommade capable of fully answering his purpose, by acting as a stimulus in different degrees; so that when slightly rubbed on the surface, it produced gentle irritation of the skin; when spread on linen and applied for six or eight minutes it acted as a rubefacient; when for

a quarter or half an hour, it occasioned vesication ; and if applied for a still longer time, it proved escharotic.\*

But although M. Gondret speaks in the highest terms of the efficacy of this medicine as a substitute for the actual cautery, and assures us, that he had employed it in many diseases with the greatest success, he does not mention any in particular ; as, however, he offers it as a substitute for the actual cautery, we may, I think, presume that he means to include epilepsy among those complaints in which he has prescribed it with advantage. It is much to be regretted that M. Gondret has not stated explicitly the nature of the cases in which he used this remedy, nor the exact mode of its application. Until we have some further explanation on the subject, I think we may

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\* The following were the formulæ prescribed by M. Gondret :

R. De suif de chandelle — six ou sept gros.  
D'huile d'amandes douces — deux ou un gros.  
Liquifiez at ajoutez.  
Ammoniaque liquide — une once.



be permitted to doubt, whether effects more highly beneficial can be produced by the ammonial preparation above mentioned than by other powerful rubefacients with which we are well acquainted. Such for instance as the *linimentum ammoniæ fortius* of the London Pharmacopœia. M. Gondret's memoir was, by the French Institute, referred to the examination of a committee, consisting of Baron Percy, M. Portal, and M. Thenard, who speak of it in terms of high commendation.

In illustration of the usefulness of the application of the actual cautery, of caustics, of blisters, issues, and setons, a great many cases might be related from Montanus, Fabricius, Hildanus, Paré, Mercatus, and several others. To these authors M. Tissot refers, and from some of them he has made extracts.\* M. Tissot says, that he himself has seen the cautery useful in some instances when applied to the arms. Willis mentions the case of a woman suffering from epilepsy who was always free

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\* Vide Tissot, p. 387—394.

from the paroxysms as long as a discharge from a caustic was continued, but became affected with them again whenever it was dried up.\* Morgagni has described the case of a child who had been subject to epilepsy for a considerable length of time, who was cured effectually by a discharge kept up for fifteen days by a blister applied to the posterior part of the sagittal suture. This child had become stupid and in a degree paralytic, but was by the above means restored to his faculties and the use of his limbs.†

These are the means most highly spoken of for the cure of epilepsy, depending upon or connected with mal-conformation of the cranium, exostosis, depressed bone, a diseased state of the investing membranes, or any cause acting mechanically upon the surface of the brain, and also in some cases depending upon other causes: and although this treatment may give occasion to much pain and inconvenience, I think the accounts we have of its success in so

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\* Willis, Path. cerebr. chap. 27.    † Morg. Ep. x. § 8.

many instances, will warrant a trial of it, especially as, under proper management, it is not likely to prove injurious.

Where we have reason to suppose that the disease depends upon causes acting in the substance, or the interior parts of the brain, such as abscesses, tumours of various kinds, effusions, &c., powerful rubefacients, setons, blisters, and issues, may also be tried ; but the probability of a cure in such cases, whatever be the mode of treatment, must be considered as very small.

In cases of epilepsy depending upon a morbid affection of the spinal marrow, rubefacients applied along the whole course of the spine, or issues, after the manner of Mr. Pott, might perhaps be advantageously employed. Dr. Esquirol of Paris effected a cure in a case of this kind, and also in a chronic and soporose affection, complicated with epilepsy, supposed to indicate cerebral effusion, by repeated applications of moxa to the spine. Professor Halle used the actual cautery, by means of the hot iron and of moxa, in several cases, with very great success. When applied to the cervi-



eal vertebræ, he found them so efficacious, that he preferred them to all other remedies.

Baron Percy professes that he is very partial to the practice of applying the moxa, but he thinks that it is not suited to those chronic and desperate disorders which render cauterization necessary. The burning cotton, he says, produces only a superficial eschar, and does not, though repeatedly used, reach through the whole thickness of the skin. In making this remark, however, he particularly alludes to those instances in which the cure of epilepsy is attempted by the application of this remedy to the head; for he thinks that its caustic power will not be found sufficiently strong to reach the bone of the cranium, and occasion exfoliation from it; a circumstance, in his opinion, absolutely necessary to the cure of the disease.\*

A case of the successful treatment of epilepsy, by establishing a drain from the back by seton, is related in the first volume of the London Medical Journal.

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\* Percy, Pyrotechnie, p. 170.

When epilepsy depends upon causes acting upon the nerves, local means also may be employed, such as the cautery, blisters, issues, and incision. Van Swieten, Tissot, and others, recommend this practice; and Van Swieten gives an instance of its success. “A woman of thirty-eight had been twelve years subject to epilepsy. In the beginning of the disease she had a paroxysm every month, and afterwards it so increased that she suffered four or five strong fits every day, each of which lasted for an hour and upwards; so that being thus rendered quite dull and stupid, she was no longer able to take care of her family. All kinds of remedies were used without the least success, and the disease increased. The paroxysm was always preceded by an affection of the leg, about the lower part of the gastrocnemii muscles, which ascended to the head, when she fell down violently convulsed and foaming at the mouth. A physician, who was present during the time of one of the paroxysms, compared the leg affected with the other, and could not distinguish any difference between them. He boldly, how-

ever, thrust in a scalpel to the depth of about two inches in the part affected, and in the bottom of the wound he found a hard cartilaginous body, somewhat larger than a pea ; he separated it from the muscles, and perceived that it rested upon a nerve, which he divided ; he then laid hold of the heterogeneous body, and pulled it out : this was no sooner done than the patient recovered from the fit, saying, that she was very well, and afterwards lived quite free from this terrible disease, and recovered her former vigour both of mind and body.\* Tissot treats much at large on this subject, and gives cases from various authors of the successful employment of these means, particularly of incision ; of the advantage of which he speaks from his own experience.† A case is related at considerable length, in the Medical and Physical Journal, in which a cure of epilepsy was effected by the application of a

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\* Van Swieten, vol. x. p. 392.

† Tissot, 100, 101, &c.



caustic to the nerve which accompanies the vena saphæna.\*

When epilepsy is preceded or accompanied by the sensation called aura epileptica, a nerve in the part from which the aura proceeds is sometimes found to be diseased. Under these circumstances ligatures have been found successful in preventing a fit; but with a view to a radical cure of the disease, something further should be attempted. The part from which the aura proceeds should be destroyed, when it can be done with safety, by cutting it out, or by the application of an actual or potential cautery. When the part cannot be safely destroyed, we should endeavour to remove the morbid affection in it by blistering, or by establishing an issue upon it. When these measures cannot be executed, or do not succeed, if the disease seems to proceed from the extremity of a particular nerve, which we can easily come at in its course,

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\* Medical and Physical Journal, vol. x. p. 52.

it will be proper to divide that nerve.\* Dr. Darwin says, “ I once saw a child, about ten years old, who frequently fell down in convulsions, as she was running about in play. On examination, a wart was found on one ankle, which was ragged and inflamed, which was cut off, and the fits never recurred.”†

By these means we attempt to cure epilepsy excited by causes which act mechanically. There are other causes, the *modus operandi* of many of which we do not understand, and to the removal of which the treatment just now mentioned does not apply ; such as certain affections or passions of the mind ; certain impressions made on the senses by disagreeable sights ; disgusting odours or sounds ; excessive or suppressed evacuations ; metastases by retropelled eruptions, &c. ; violent exercise ; exposure to great heat ; intoxication, and irregularity of diet.

In the former part of this treatise, I have

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\* Cullen, vol. iii. p. 378.

† Darwin, *Zoonomia*, p. 329.

particularly pointed out the causes of epilepsy which may be termed mental, and those which arise from strong impressions made on the senses, many instances of the influence of which I have mentioned. These should as much as possible be carefully avoided, especially by persons predisposed to the disease. The sight of a patient in the epileptic paroxysm should be particularly guarded against.

When epilepsy appears to have been occasioned by excessive evacuations, they should be restrained ; when by suppressed evacuations, they should, if possible, be restored. When it arises from metastasis, or retro-pulsion of external diseases to the brain or other internal parts, we must endeavour to propel them to the surface. This, however, excepting in cases of infectious cutaneous disorders, is always extremely difficult, and not unfrequently impossible. — Tissot remarks, that epilepsy depending upon morbid humours turned out of their usual course, is the most difficult to cure. He was many years ago, he informs us, called to a case of convulsions and delirium, attended with the most dreadful pains



in the head, occasioned by a cutaneous affection repelled by the application of Goulard's Saturnine lotion. The patient had been attended by three skilful physicians, who had directed their attention to the restoration of the humour, but in vain. In such cases, however, though the hope of a cure may be very small, we must endeavour, by all the means in our power, to restore the original affection, provided that it be an evil of less importance than the epilepsy. Where cutaneous eruptions have been driven from the surface, we are advised, by an eminent practitioner, to apply warmth and gentle stimulants, that the discharge by the skin may return. Thus, in infants, who have been rendered epileptic by suddenly drying up the discharge of ichor from the skin of the head, he says it is of service to foment that part with a lixivium of Venice soap, and afterwards cover it with an aromatic plaister. He mentions a case, in which the application of a plaister of labdanum with an eighth part of blistering ointment was found efficacious ; for, after a few hours, the skin began to grow red, a troublesome itching was produced, the

flowing of the ichor was renewed, and at the same time the epileptic fits immediately ceased. It is always safest to solicit a suppressed excretion, by those parts through which it used formerly to pass.\*

In these cases it is difficult to lay down general rules. Perhaps blisters and rubefacients of different degrees of power, the warm bath, and diaphoretics, are the remedies we may most safely and successfully employ. On the subject of epilepsy from metastasis, together with the mode of treatment in these cases, much valuable information may be obtained from Dr. Prichard's work.

I have said that epilepsy is sometimes connected with, or sympathetic of, certain morbid affections of the viscera of the abdomen and pelvis, particularly of the intestines and the uterus. I shall endeavour to point out the means which seem best calculated to afford relief, or to effect a cure under these circumstances.

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\* Van Swieten, p. 388.

This disorder may be occasioned by a deranged state of the stomach, in consequence of indigestible and irritating substances lodged there. In such cases, emetics and purgatives are indicated. In the case described by Galen, formerly mentioned, in which epilepsy was connected with the state of the stomach, the medicines found most useful, he says, were such as purge and strengthen. \*

These seem to have been very generally and successfully employed also in later times. Cases illustrative of the good effects of the administration of them are mentioned by De Haen, and various other authors.

Dr. Roget informs me, that he thinks he has seen benefit result from the administration of ipecacuanha in doses not sufficient to nauseate, or at least to produce only a slight nausea, and continued for some time. This has occurred in young persons, in whom the disease had been of long standing, and was therefore likely to resist the

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\* Galen, *De Locis Affect.* l. v. c. 7.



ordinary modes of treatment. Dr. Roget usually began with one grain of this medicine, increasing the dose to two or three grains, three times a day.

A similar practice has been recommended when the disease is connected with the state of the intestines above described, under the title enteric epilepsy. In this complaint Tissot advises a repetition of purgatives, which he prescribes more or less frequently, according to the shorter or longer intervals of the fits; at the same time paying strict attention to the regimen and diet of the patient. The cathartic which he found most successful, was the pulvis cornachini, consisting of scammony, cream of tartar, and oxide of antimony. The neutral salts, senna, and jalap were likewise prescribed with advantage.

In these cases he also recommends the warm mineral-waters, which, given in small doses, fortify the stomach and intestines. In a debilitated state of the bowels he advises steel in substance, or in the waters of Spa, Pyrmont, &c. In enteric epilepsy attended with plethora, where the brain seems loaded with blood, Dr. Prichard advises

bleeding general or topical, and afterwards emetics and purgatives. If the stomach and bowels are loaded with undigested substances, as appears from the presence of flatulence, acid eructations, tension, and fulness of the abdomen, and other symptoms, immediate relief should be sought by these remedies. There are some cases in which strong vascular action in the head may render emetics dangerous; but these instances are not numerous. It is often proper to begin by prescribing five or six grains of calomel with one, two, or three of tartarized antimony. This mixture will often excite vomiting and purging at the same time. If necessary, it may be followed by a dose of ipecacuanha to promote the former action. In cases of obstinate constipation, clysters, especially of a mixture of castor-oil and oil of turpentine, have been given with success; to these may be added the warm bath. After the intestinal canal has been thoroughly evacuated, advantage may still be derived in what may be considered the chronic affection by the occasional administration of such medicines as calomel, rhubarb, and

magnesia, the compound decoction of aloes with carbonate of soda or potass, and mercurial and compound aloetic pills; and the beneficial effects of these medicines may be promoted by occasionally opening the stomach and bowels by ipecacuanha as an emetic, and by strong purgatives: small alterative doses of these medicines may be likewise given with advantage. In enteric epilepsy we sometimes find an almost invincible torpor of the intestines. In these cases cathartics are especially necessary, and mild clysters. Saline purgatives, much diluted, and oleum ricini are very useful under these circumstances.\* In enteric epilepsy, attended with torpor of the bowels, Dr. Prichard strongly recommends the use of oleum terebinthinæ in doses of half a drachm, or one or two drachms with aqua carui, or cinnamomi made into an emulsion by means of honey or mucilage. He thinks, that this medicine has some specific effect in cases of fits depending upon enteric irritation. He is also of opinion that

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\* Prichard, p. 260.



argentum nitratum, and the medicines called nervine and anti-spasmodic, are chiefly useful in epilepsy of this kind. In enteric disorder attended with diarrhœa, he recommends absorbents, hydrargyrus cum creta, aromatic powder, and infusions of rhubarb, cloves, &c.

Among the causes of enteric irritation, giving occasion to epilepsy, we may reckon the presence of worms in the intestines: and accordingly we find that anthelmintics have, in very many cases, been found useful. Instances of the successful employment of various vermifuge medicines in this disease, might be quoted from the writings of Bartholinus, Stahl, Heister, Wepffer, and many others. I have, in some cases, found the *dolichos pruriens* efficacious under these circumstances.—Perhaps the use of *oleum terebinthinæ* in epilepsy may be attributed to its well-known power as an anthelmintic, particularly by the expulsion of the tape-worm, the irritation from which seems to be not unfrequently the cause of epileptic and other convulsive fits. When these disorders are accompanied by symptoms indicative of the presence of worms, such

as tumid abdomen, offensive breath, itching of the nose, grinding of the teeth in sleep, &c. anthelmintics should always be given.

When speaking of the causes of epilepsy, I remarked, that the disease, in some instances, has been produced by improper food, particularly certain kinds of vegetables and fish, such as mushrooms and leeks, muscles, eels, &c. ; and also by acrid and poisonous substances, of various sorts, especially lead, arsenic, and other pernicious minerals. With a view to prevent or remove epilepsy or other morbid consequences of such causes, I shall content myself with saying, generally, that the chief and most powerful remedies are emetics and cathartics, especially those of speedy operation. For particular instructions on this subject I refer to Mr. Orfila's valuable treatise on poisons.

With respect to the treatment of uterine or hysteric epilepsy, as it is called by some writers, Dr. Prichard furnishes us with many useful practical observations.

Epilepsy sometimes depends on a total suppression of the catamenia, sometimes on their sudden disappearance in consequence

of exposure to cold, and other causes. In certain cases, epileptic fits come on when the catamenia having taken place, cease to recur at their regular times; in others they appear on the cessation of menstruation at the usual age. These cases are all analogous in essential particulars. “ They must be considered as denoting an effort of the system to establish a natural determination, which being diverted from its proper course, gives rise to morbid congestion in the brain, and to the obvious consequences of that state. The practical rules to be observed in all these cases are similar.”\* The quantity of blood to be taken must be regulated by the strength of the patient, and the particular circumstances of the case. The beneficial effect of bleeding is much promoted by immersing the body, or at least the lower part of it, in a warm bath. † While the patient is in the warm bath, friction should be employed, with flannels to the back, loins, and abdomen.

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\* Prichard, p. 182.

† Ibid. p. 186.



The patient should remain in the bath until she begins to be fatigued and exhausted ; and after she is taken out and put into bed, the effect of the bath may be promoted and maintained by fomentations to the feet, and to the lower part of the abdomen, and by encouraging a circulation through the extreme vessels, by means of moderate warmth, and by frequent draughts of warm diluent fluids.\* Stimulating clysters, such as an ounce of *oleum ricini*, with an ounce of *oleum terebinthinæ*, are in these cases recommended. Blisters applied to the sacrum, and over the pubes, are thought by some to be powerful in determining to the uterine vessels ; but Dr. Prichard had no experience of their efficacy. The medicines indicated in these cases are those termed *emmenagogues*. “ Perhaps the most powerful of these,” he says, “ is the oil of turpentine, which is one of the most diffusible stimulants in the whole *materia medica*.”† He has not found it very efficacious in uterine epilepsy, but he was never

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\* Prichard p. 187.

† Ibid.

driven wholly to depend upon it. He, however, warmly recommends a trial of it. The *tinctura melampodii*, and the *pulvis sabinæ*, possess emmenagogue powers, but are not so effectual as turpentine. “Should the efforts to restore the uterine function prove abortive, all that remains to be attempted is to bring the constitution into a state in which the defect of this function may be productive of less injury, and particularly may not give rise to epileptic fits.”\* With this view we must avoid a plethoric state of the system by a sparing diet, exercise, and frequent changes of air, together with care to keep the bowels in a state more relaxed than is natural in health; and we must institute artificial drains by issues or setons, which not only reduce plethora, but appear to have further efficacy in uterine epilepsy, upon a principle explained by Dr. Prichard. These disorders, it is remarked, are almost peculiar to unmarried women, and pregnancy generally removes the disorders connected with defects of the catamenia.

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\* Prichard, p. 188.

In cases of epilepsy from dysmenorrhœa, moderate bleedings, and those means which produce relaxation of the system, and a determination towards the uterus, are principally to be relied upon. Dr. Prichard recommends the use of clysters, and sometimes a few doses of the oil of turpentine. For some directions, as to the mode of the abstraction of blood, and the quantity to be taken, together with many useful observations and practical directions respecting enteric and uterine epilepsy, I beg leave to refer to Dr. Prichard's valuable work.

With respect to epilepsy, when connected with a diseased state of the liver, or of the viscera of the pelvis, I find in authors very little practical information. It may be observed generally, that the means usually directed for the cure of the disorder of which the epilepsy is sympathetic, should be employed. Where epilepsy is connected with pain about the lower edge of the liver, Dr. Darwin recommends venesection, warm bathing, opium, electricity, and some other remedies.

Tissot and others have mentioned several



cases of epilepsy, connected with diseases of the pelvic viscera, but they have not given any specific directions as to the treatment of them.

These are the chief remedies recommended by the most celebrated physicians for the cure of the various kinds of epilepsy. Many others have been employed by empirics, many of which are very whimsical and absurd. They were much in fashion among the antients ; yet some of the most eminent of the Greek physicians seem to have had very little, if any, confidence in them. Hippocrates, as before observed, ridiculed the notion, that epilepsy is connected with supernatural influence ; and maintains, that it is not to be cured by expiations, or incantations. In the treatment of it, he trusts chiefly to a proper regimen ; to a suitable diet and exercise. In this Galen agrees, and points out at considerable length, in the *Consilium pro puero epileptico*, the food, &c. which, in his opinion, is best adapted to epileptic persons. His list of medicines is very small ; cathartics, simple oxymel, and oxy-

mel of squills, are those which he chiefly employed.—Aretæus makes mention of several of the absurd specifics of his time, but expresses himself very cautiously as to their use. He says, it has been reported, that epileptics have been cured by eating tame cats, the brain of a vulture, and the raw heart of a sea-fowl; but that he had never tried them. He adds, that he had actually seen fresh blood drunk as a medicine in these cases; but whether any cure had been thus effected no one could inform him. He had read, he observes, in a certain author, that the human liver had been prescribed; but whether any person had been thus restored, he had never heard, nor could he with certainty state. He laments that any one should be subject to such a misfortune, and be obliged to have recourse to such horrible remedies.\* — Alexander Trallianus differs much in opinion from Hippocrates, Galen, and Aretæus, on this

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\* Λόγος ὅτι δὲ γυπὸς ἐγκέφαλος, καὶ αἰδύης ὠμῆς κραδίη, καὶ οἱ ἐνοικάδιοι γαλεοὶ βρωθέντες, λυουσι τὴν νοῦσον, — ἀλλή δὲ τὶς γραφὴ ἐφραζεν ἥπαρ ἀνθρώπου φαγεῖν. Aretæus, De Cur. Morb. Diut. lib. i. c. 4.

subject. He speaks with great respect of the virtues of several of the most extraordinary specifics, such as the liver of a weasel freed from bile, taken for three successive days fasting; the skull of an ass; the ashes of cloths stained with the blood of gladiators, given in wine, &c. With a view to rouse a person from an epileptic fit, he recommends an ointment to be rubbed on the spine, made by boiling a chamæleon in oil, and adding the bones of the animal; and for the same purpose, he appears to have had much faith in the efficacy of a proper application of two small pebbles, one black, the other white, which are to be found on the dissection of young swallows. If these are placed upon the patient during the fit, he will be immediately roused.\* The black pebble must be fastened to the skin. This, he says, does wonders.† He observes, however, that these pebbles are not easily procured. Alexander quotes many other

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\* Ἡπιτιθεῖ καὶ ἔγείρει αὐτόν.

† Καὶ τοῦτο θαυμαστῶς ποιεῖ.



strange and ridiculous means from various authors \*, of which he appears to have had a high opinion. Of one of these, he says, it is a wonderful and excellent remedy, and must not be divulged. † It appears, that Alexander had been a great traveller, and had picked up several of his surprising specifics in Gaul, in Spain, and other countries.— Paulus Ægineta seems to have had no faith in such specifics, at least he does not mention any but the common remedies, except one from Galen, namely, the suspension of the pæony root about the neck. Celsus says, persons have been freed from epilepsy by drinking the warm blood of gladiators who had been slain. ‡ Pliny reprobates the practice of employing unnatural and disgusting medicines § for

\* Apollonius, Theodorus, Archigenes, &c.

† Θαυμασὸν οὐν καὶ ἐξάριτόν ἐστι καὶ ἔγω σοι ἀμετάδοτον.  
Alex. Trall. lib. 1.

‡ Jugulati gladiatoris calido sanguine epoto. Celsus, lib. iii. c. 24.

§ Quis ista invenit, ostenta? tecum enim res erit eversor juris humani, monstrorum artifex, &c.— Quis veneficia innocentiora effecit, quam remedia? Plin. Nat. Hist. l. xxviii. c. 1.

the cure of this disease ; yet among the remedies which he mentions without censure, we find some that are very strange. \*

Certain eminent persons, in modern times, speak not unfavourably of anti-epileptic nostrums. Van Swieten remarks, that as, for the most part, they do not disturb the system much, and as the opinion conceived of these remedies cannot possibly be blotted out of the minds of some persons, skillful physicians have readily enough consented to the use of them. † — Morgagni, speaking of arcana for the cure of this disease, says, I have lately heard of one much esteemed, namely, a small stone, which is generated in the little animal called by the Italians *limacone ignudo*, or naked snail, which, however, is not recommended as a remedy for all epilepsies.

\* *Comitali morbo testes ursinos edesse prodest, &c.* Plin. Nat. Hist. l. xxviii. c. 16. — *Magis placet draconis cauda in pelle dorcadis adalligata cervinis nervis ; vel lapilli e ventre pullorum hirundinum sinistro lacerto annexi.* l. xxx. c. 10.

† Van Swieten, sect. 1085.

Morgagni seems to approve of a medicine prescribed by Albertini, whom he considers as a great master in the healing art, consisting of the human skull, rasped and beaten in a mortar, and moistened with the water distilled from black cherries. \* — Among the moderns, who seem to have been credulous and superstitious on this subject, we may reckon Forestus. Being called to visit a young man afflicted with idiopathic epilepsy, he pronounced the case dangerous, both because the brain appeared to be the primary seat of the disease, and because the configuration of the stars at the patient's nativity was unfavourable. From these considerations he predicted that the complaint would be obstinate and difficult; and so indeed it proved to be; for although he administered an arcanum from Guainerus, consisting of the human cranium and the hoofs of an ass in powder, together with some other extraordinary ingredients; and although he directed that a composition of

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\* Morgagni, Epist. ix, art. 6.



black pepper, with the hair of a very black dog, (*nigerrimi canis*) together with mustard seed, and the root of peony, should be put into a little bag, and hung round the patient's neck, he gradually grew worse, and at length became idiotic. — Forestus informs us that another medicine had been mentioned by a certain physician, which he very gravely says he did not choose to try, because he thought it of a superstitious nature.\* — M. Tissot, after having given a long account of various anti-epileptic specifics employed by empirics, pronounces them all to be useless, disgusting, absurd, without virtue or power, unworthy of the name of remedies, and only serving to show the littleness of man when under the influence of system, prejudice, and superstition. — Perhaps this condemnation may be considered to be too general and indiscriminate. There is no doubt that epilepsy has often been produced by causes operating upon the

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\* Forestus, *Quest. lib. x. obs. 60.*

mind, as I have above mentioned ; and I think it is by no means unreasonable to admit the possibility that it may be removed by remedies operating upon the mind. “ That fear, or some degree of terror,” says Dr. Cullen, “ may be of use in preventing epilepsy, we have a remarkable proof in Boerhaave’s cure of that which happened in the Orphan House of Haerlem.” He adds, “ and we have met with several other instances of the same.”\* He thinks that the viscus quercinus might have been useful in antient times, when it was an object of superstition.

Against the present employment of these specifics, it may be objected, that the faith necessary to their efficacy no longer exists. This, however, is not precisely true. The belief in the power of charms in the cure of epilepsy, even in the present day, is not wholly extinct, as appears from the following account, extracted from a modern medical journal. A young man, who had

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\* Cullen, vol. iii. p. 387.

been afflicted with this disease for two years, after having taken a great variety of medicines without any good effect, was persuaded to try an amulet, which proved so far efficacious, that, after the experiment, he remained free from the fits, although he was accustomed to have several of them every week. For a description of this amulet, I refer to the thirty-fourth volume of the Medical and Physical Journal.

The principal objection to the trial of means for the cure of epilepsy, which are designed to operate upon the mind of the patient is, that the degree of their effect is not under our controul, and that by the employment of some of them, we may produce much mischief. A case in point is related by Tulpius.\*

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\* Lambertus Vitellius adolescens florentis ætatis, plurimum molestiarum perpessus, a frequentibus morbi comitialis insultibus, decrevit tandem ultima experiri, secundum illud Celsi: Quos ratio non restituit, illos adjuvat interdum temeritas, confugitque quamvis invittissimus (O durum necessitatis telum!) ad execrandum, ac detestabilem humani sanguinis usum quo tremula



In deliberating upon the propriety of the administration of such remedies as those above mentioned, we must carefully consider what sort of mental emotion is likely to be produced by them. If they be calculated to work upon the imagination without exciting terrific or depressing passions, I see no impropriety in employing them, however ridiculous they may appear to persons of strong minds.

I have now finished what I had to communicate respecting the history, causes, and method of cure, of apoplexy, palsy, and epilepsy. — In my account of these very important nervous diseases, I have endeavoured to abstract, to condense, to methodize, and to convey in clear and plain language, the best information I could collect from a great number of writers, both

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*manu, aversis oculis, pallida facie, ac horrente universo corpore in obluctantes fauces violenter infuso, tantum abest ut terribilis morbus inde imminueretur ut potius plurimum incrementi sumpserit, habuerit que multo pejus, quam ante Thyestean hanc mensam.*

*Tulp. Observ. Medic. lib. iv. cap. iv.*

antient and modern. — I cannot flatter myself that, by the investigation which I have made of these obscure disorders, I have done much towards the illustration of their nature ; but I do hope that the description I have given of the experiments, observations, opinions, and practice, of the most celebrated physicians in various ages, respecting them, will prove, in some degree, useful, both by lessening the labours of the student, and by affording practical assistance to persons who are actually engaged in the duties of the profession.

THE END.

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